ANNUITIES
ON
LIVES,
AND FOR
Limited Terms *of* Years,
CONSIDERED.

Advertiſement.

LANDS, Buildings, Timber, and Artificers Work are Survey'd, Mapp'd, and Valu'd by the AUTHOR.

ANNUITIES
ON
LIVES,
AND FOR
Limited Terms *of* Years,
CONSIDERED:

Being OBSERVATIONS on

What hath been lately advanced by divers AUTHORS, tending to depreciate the Value of ESTATES on thoſe Tenures.

To which is Added, A

SUPPLEMENT
TO THE

Gentleman's Steward, and *Tenants of Manors Inſtructed.*

By JOHN RICHARDS, *of* Exon.

LONDON:
Printed for J. OSBORN, at the *Golden Ball* in *Pater-noſter Row.* M.DCC.XXXIX.

ANNUITIES

ON

LIVES,

AND ON

Limited Terms of Years,

CONSIDERED:

being Observations on

What hath been lately advanced by
divers AUTHORS, tending to depreciate
the Value of ESTATES on single Lives.

TO WHICH IS ADDED A

SUPPLEMENT,

TO THE

PREFACE.

A Great many Authors have, of late Years, made it the Subject of their Inquiry to find out the Value of Annuities and Eſtates held for Years abſolute, *and* for Years determinable on Lives; *among which, how few are there that have purſued the ſame with Views diſintereſted, and free from Prejudice? And in how ſmall a Volume would all that hath been publiſhed on that Subject be comprized, were every thing to be left out which is not the Reſult of rational Deductions from Hypotheſes in any Degree probable?*

Were this Subject (as well as others) treated with no other View, but that of inſtructing Mankind, by diſcovering to them uſeful Truths; and did ſuch as undertake the Task, endeavour to expreſs themſelves, and convey their Sentiments in Terms ſhort, plain and intelligible, and ſuited to the Capacities of thoſe they ſhould inform;

creſully

carefully avoiding all intricate and prolix Methods of Argument, in which Error is very often concealed, and the Reader impoſed on by falſe Concluſions; I ſay, were the Arguments on this Subject purſued in this Manner, and with thoſe Views; and did none undertake to write on this Point, but ſuch as have ſufficient Abilities to manage it; the Differences between Authors, which at preſent appear of ſo monſtrous a Size, would ſoon dwindle into very ſmall ones.

For, as to that Part of the Computation, which is purely mathematical, and ſtrictly demonſtrative, in that every body would agree. Thus, for Inſtance, where the annual Sum, the Rate of Intereſt, the Term of Continuance, (or the Ratio of a Series expreſſing it) are fixed, no Difference can ariſe about the Value of ſuch Annuity in ready Money: And, as to Tenures for Life or Lives, which are of all others the moſt difficult to value, on account of the Uncertainty of human Life; yet in thoſe, the annual Sum and Rate of Intereſt being agreed on, all that would be wanting to adjuſt the Value, would be to fix the Terms of a decreaſing Series, which would expreſs the Probability of Life, from any given Age; and this being (from the Nature of the Thing) a Matter incapable of mathematical Certainty, it would, doubtleſs, be of Uſe to the World, if (in order to fix the beſt Hypotheſis for that Purpoſe) ſuch Perſons as have Leiſure, Skill, and Opportunity, would (inſtead of cavilling

willing about it) from the Bills of Mortality, Parish-Registers, Rentals of Manors, and Stewards Accounts, from the Pedigrees of Families, Lists of the Succession of the Kings, Nobility, Bishops, &c. from their own Observations, and from all other proper Assistances, judiciously draw up and publish their Thoughts on that Part of the Subject; in which they should be very careful, that no former customary Methods of Valuation, no Views of Self-interest, or of serving any particular Set of Sellers or Purchasers, nor any other Consideration whatsoever, but that of adjusting the Series from the true Result of the Facts that they have collected, do in the least biass their Judgment, or corrupt their Understanding: And were the Inquiry pursued, with such an honest Integrity, and Search after Truth only; I am persuaded, that all our Disputes about this Difficulty would soon vanish, and such an Hypothesis might be established by Facts thus fairly represented, as would have the Concurrence of every judicious Person, who is willing to be informed himself, and who would not serve any Interest of his own by the Ignorance of other People.

But if some Differences in Opinion should still subsist, they would be small and trifling; we should not then have one Author affirm, that the best Life is equal to a Term of 14 *Years only, whilst another, with an equal Air, and a*

much better Ground of Aſſurance thinks it equal to 33 *Years and upwards.*

It may be objected, that whatever my Sentiments may be as to the Certainty of adjuſting the Value of Lands, where the Term to be purchaſed, and Rate of Intereſt, admit of no Diſpute; Experience ſhews that a great Contrariety ariſes about the Value of Tenures for ſuch limited Terms; and that of late a vaſt deal hath been publiſhed on both Sides, about raiſing the Fines for renewing of Years, lapſed in Terms granted by Biſhops, Deans and Chapters, Colleges, and other Bodies Corporate.

And indeed the Obſervation is very right; a great deal hath been advanced (with what Intention is very plain) tending to depreciate the Value of thoſe Renewals; but let it be obſerved what inconcluſive Arguments, what mean Shifts, and falſe Repreſentations, what prepoſterous Cravings for Allowances, and what inexcuſable Miſapplications of Law and Equity, have thoſe Authors been forced to fly to, for the Support of their abſurd Propoſitions, and oppreſſive Concluſions? The thin Diſguiſe is eaſily ſeen thro' by thoſe who have ſtudied the Nature of the Subject; and were ſuch People only concerned in the Conſequences, theſe Pains might have been ſpared; but the unravelling the perplexed Arguments, and expoſing the Conſequences that flow from them, the ſtripping them of thoſe

Coverings

Coverings which hide their Deformity from common Readers, will be of Uſe to thoſe whoſe Intereſts may be nearly concerned, although their Knowledge in Calculations of this Nature may not be ſufficient to detect the Fraud, and to guard them againſt ſuch Impoſitions.

In my Gentleman's Steward, *and* Tenants of Manors Inſtructed, *publiſhed about nine Years ago, I endeavoured to expoſe the common Methods then in Uſe, for the Valuation of Annuities or Eſtates in Lands and Houſes, on the ſeveral Tenures by which they are generally held; and to eſtabliſh a new Method for that Purpoſe, laying down ſuch Tables as I judged neceſſary for common Practice; and conſidering the Nature (the Out-goings or Diſburſements to Rates, Taxes, Rents, Repairs, and the like; and in what manner and how much the Purchaſer ought to be conſidered, and allowed in that reſpect.*

'Tis too common for People to be over-fond of their own Iſſue; I ſhall therefore ſubmit to the Judgment of ſuch unprejudiced Perſons whoſe Abilities qualify them for that Office, whether the Attacks made on the Hypotheſis I there laid down, by a late Author, hath, in the leaſt, either deſtroy'd or weaken'd it.

The Author of the Eſſay on Annuities hath done me too much Honour, by expoſing me to View

View in ſuch good Company as Dr. Halley, *Mr.* De Moivre, &c. *He could not indeed expect that either of thoſe Gentlemen would paſs ſo great a Compliment on him, as to take any publick Notice of his unfair Treatment; and therefore, leſt his large Tract ſhould paſs intirely un-noted, he judged it neceſſary to irritate ſome Perſons of leſs Diſtinction, that by ſtirring up their Reſentments, it might be thought that he hath advanced ſomething worth the taking Notice of.*

The Author, at firſt, put no Name to his Performance; yet I am now told (for Reaſons beſt known to himſelf and his Bookſeller) he hath thought fit to ſupply that Omiſſion; but, whether Weyman Lee *be the real Name of the* great Man, *or only a fictitious one made uſe of to ſerve his Ends, is uncertain; I rather think the latter. No one can be ſure this is not the ſame Perſon, who, in the Year* 1732, *called himſelf* Everard Fleetwood, *Eſq; and I ſhould the rather ſuſpect it, for that the* Inquiry into Tenants Rights *ſeems to have flowed from the ſame Pen with the* Eſſay on the Value of Leaſes.

This (for aught I know) is the only Author that hath directly attacked my Tables, and Method of Valuation; and I ſhall, as well as I can, pick out of him the Objections which he repreſents ſo formidable, and after uncloathing them of the gay Dreſs, in which they ſeem deſignedly

deſignedly wrapt up, and pointing out the inconcluſive Arguments, by which they are ſupported, and the abſurd Concluſions that flow from what he hath advanced, leave him expoſed to his greateſt Enemy, Reaſon and common Senſe.

But here it muſt not be expected, that I follow this Author in his Circumlocutions, and fill up a hundred Pages with what may, with more Perſpicuity, be expreſſed in five; this would be to follow him *indeed, but would rather perplex than inform the* Reader, *and give him Cauſe to ſuſpect that we were writing for Bread, rather than ſearching after Knowledge.*

And for the ſame Reaſons ſhall I neglect all the Author's Excurſions from the Subject: Thus all that is ſaid from Page 107 *to* 130, *about the nominal and ſpecifick Value of Money, and the Change of the Rate of the legal Intereſt; of the Diminution in Weight, and Increaſe in Value, of the Silver and Gold Coins; and of the Miſchiefs that attend the varying the Ratio between the Value and Weight thereof, is, to ſay no worſe of it, no more to the Purpoſe, than if he had inſerted, inſtead of it, the Story of* Don Quixote *and the Windmill: And of the the ſame Uſe is his fine-ſpun Calculation of the Duration of the Credibility of human Teſtimony; and many other pretty Digreſſions, without which the Book would have been too thin for his*

his Purpoſe, and his profound Skill in the Art of Reaſoning been leſs known.

When I have (as conciſely as I can) diſpatched this Author, I ſhall make ſome Obſervations, on what hath been lately advanced by another on this Subject; and as that, for the moſt part, turns upon the Eſtimation of the Value of Leaſes, granted by Biſhops, Deans and Chapters, Heads and Fellows of Colleges, and other Societies, and of the Renewal of Part of the Terms lapſed in ſuch Leaſe, I ſhall endeavour to ſet that Matter in a true Light.

ERRATA.

Page 12. Line 29. read, for *a* Term. p. 46. l. 10. read, nothing *at* all. p. 47. l. 9, 11, 25, 26; and again, in p. 48. l. 1, 3, 5, 8, 10, and at ſome other Places, the Decimal Parts ſtand too far diſtant from their correſpondent whole Numbers; thus, 17, 20 —— 13, 01, ſhould be thus expreſſed 17,20—13,01, &c. p. 55. l. 4. read Value *for* the Lapſe. p. 60. l. 28. dele *are*.

THE

THE ESSAY

To Aſcertain the Value of

LEASES and ANNUITIES,

CONSIDER'D.

THE Method propoſed by this Author in pag. 2. and which he afterwards adheres to, for computing the Value of Annuities and Leaſes on Eſtates, for Life or Lives, is by reducing the ſame to a Term for Years certain, and eſtimating them as ſuch.

On the contrary, the Hypotheſis, which I formerly advanced, and which I ſtill inſiſt on as a rational one, is, to conſider the Continuance of Life from any given Age, for 1, 2, 3, 4, 5, 6, 7, *&c.* Years, to the Extremity of old Age, as a Series of Chances, decreaſing in Value as the Years increaſe; and the Sum of thoſe Values (Intereſt at any given Rate diſcounted yearly) in ready Money, as the whole Value of the Annuity expectant on ſuch a Life.

Theſe are the general Methods of Calculation, which we have ſeverally laid down; and I believe, I may take it for granted, that the Author, by his *Term of Years certain*, means much the ſame Thing which I do by *The Sum of thoſe Values*. Which of us hath purſued the beſt Method to come at the Value of this Series, muſt be left to the judicious Reader: I believe both may be amended, and have hereafter given ſome Hints to that Purpoſe.

This Author hath taken great Liberties (in many Places of his Book) to expoſe Mr. *de Moivre* and myſelf, alledging, and endeavouring to make the Reader believe, that the Reſult from my Tables made by his Rules exhibit the Continuance of Life to be longer or ſhorter in Proportion to the Rate of Intereſt that the Computation is made at. The Truth or Falſity of this Aſſertion (which is often repeated with a vaſt deal of Triumph) will appear when I come to conſider it hereafter, where it falls in my way: At preſent, I ſhall only take Notice that the above-mentioned Series laid down by the Author and myſelf, being the ſame, (as in this Caſe it is ſuppoſed to be) all that follows in the Calculation is purely numerical; and if by a Proceſs of that kind on the ſame *Data* any two Authors ſhould differ in the Reſults, the World would very juſtly pronounce one or both of them egregious Blunderers.

In pag. 4. the Author begins with conſidering the Value of Eſtates for Years, and lets us know what (in his Opinion) ought to be reckoned

koned among the Allowances to the Tenant; Rates, Taxes, Repairs, and Caſuàlties (which doubtleſs ought to be duly regarded) do not content him: He thinks the Tenant muſt be allowed for aſſuring the Rent, and for paying it in; and not only ſo, but for his Trouble in managing the Eſtate: Which in plain Words I take to be, The Tenant that takes a Leaſe for Years, ought to deduct his Charge of Ploughing, Sowing, and Manuring the Land, looking after his Workmen, going to Market with his Commodities, and to Fairs with his Cattle; Hedging, and Fencing, to preſerve the Incloſures, attending his Landlord at his Houſe, and the Steward at the Leet, drinking *October* with the former, and eating roaſt Beef with the latter: And after all theſe Attendances and Expences are deducted out of the Sum which a Rack-Renter, that takes upon him all this at his own Charge, can afford to give for the Eſtate, (which and only which I take to be properly called the *Yearly Value*) then he thinks the Remainder may be called and reckoned *a Clear Annuity*, or neat Produce, which he propoſes that his Purchaſer ſhall lay out his Money in at a Diſcount of 6 *per Cent.* But why at ſo large Intereſt I do not know, unleſs thoſe Charges and Out-goings, or ſome other Part of them, be once more to be brought into the Account.

Surely it cannot be neceſſary to ſhew the Unreaſonableneſs of theſe Cravings; the bare expoſing them naked will be ſufficient to

guard the Reader againſt ſuch voracious Locuſts, whenever they come in his Way again.

In pag. 14. is handled an Inſtance given by a reverend Author by way of Compariſon between Purchaſers of Lands in Fee, and for a Term of Years. The Caſe, as put by the reverend Author referred to, ſtands thus:

A Purchaſer in Fee gives for an Eſtate of 100 *l.* a Year —— —— ——	2000 *l.*
A Purchaſer for 21 Years, for an Eſtate of the ſame Value —— ——	1200 *l.*
The latter hath an Income equal to the other, and Caſh in Hand ——	800 *l.*
This Caſh at 5 *per Cent.* Simple Intereſt, in 7 Years, will produce ——	280 *l.*
If he gives for that Renewal 2 Years and half Value, *viz.* —— ——	250 *l.*
He will ſtill be a Gainer (more than the Freeholder) by —— ——	30 *l.*

Our Author, conſcious, I ſuppoſe, that his Predeceſſor, the Author of the *True Eſtimate of Leaſehold Eſtates*, had not ſufficiently overthrown this Concluſion, takes upon himſelf to ſhew not only that the Leaſe-holder hath not a Better, but that he hath a much Worſe Bargain, than he that lays out his Money in Fee Simple.

And here he is ſo civil as to wave a great many very potent Arguments, and is at his Allowances again; which, if admitted, will doubtleſs bring about his End upon any Emergency;

gency; he does not take any Advantage of this, nor of the Improvement that a Fee-ſimple Purchaſer may make in 20 Years Time, by breaking up Meadow and Paſture Grounds, (*that is, by committing Waſte and Deſtruction*) and by cutting of Timber (*that is to ſay, Timber of twenty Years Growth; for he hath had the Eſtate no longer, and the valuable Timber upon it at the Time of Purchaſe, he bought for a valuable Conſideration with the Lands).* He puts the whole Difference on this ſingle Point, *viz.* the Riſe of Lands in the Purchaſe, within this Compaſs of Time.

And now, to ſet forth the Author's Judgment, Candour, and Integrity, give me Leave to ſhew how he manages his *fair and plain Computation*, to *ſuit it to every Man's Capacity.*

The Fee-ſimple Lands valued at 4 *per C.* are worth more than the ſame when valued at 5 *per C.* by 5 Years Value--	500*l.*
The Leaſe-hold for 21 Years, valued at 4 *per C.* are worth more than the ſame when valued at 5 *per C.* by $1\frac{1}{5}$. Year's Value ——— —— ——	120*l.*
Ergo, The Purchaſer in Fee would gain by laying out his Money, more than the Purchaſer of the Term, if both to be ſold again, within 20 Years ——	380*l.*

Now

Now if this Proceſs *be* a fair and plain one, I am ſure it is not ſuited to my Capacity; and the Author muſt excuſe me, if I unravel this egregious Sophiſtry.

Intereſt of Money in the Space of 200 Years fell from 10 to 5 *per Cent.* Hence in a Medium it hath fallen 1 *per C.* in 40 Years; and conſequently about Half *per C.* in 20 Years.

And hence 2000 *l.* laid out on Land in Fee, will in 20 Years gain ——	*l.* 222 $\frac{2}{9}$
By the ſame Way of arguing, 1200 *l.* laid out in Leaſe will gain ——	*l.* 60
The Difference is —— ——	*l.* 162 $\frac{2}{9}$

But the Author's *fair and plain Computation* hath one Fallacy more in it: For, by the Rule of Proportion, As 2000 *l.* Stock is to 222 *l.* $\frac{2}{9}$ Gain; ſo is 1200 *l.* Stock to 133 *l.* $\frac{2}{3}$ Gain. By this Analogy it appears, that if the Leaſeholder had gained 73 *l.* 13 *s.* 4 *d.* more, he would gain as much in proportion to his Money laid out, as the Purchaſer in Fee. And there ſeems to be a pretty wide Difference betwixt this and 380 *l.* I deſire that this may be placed to the Account of the Author's Fairneſs, or his Ability in Numbers, as the Reader thinks fit.

I cannot forbear ſaying, that this reverend Author, whoever he was, deſerved much kinder Treatment, in relation to this Inſtance, than he hath met with either from the Eſſay-Writer, or the Author of the Eſtimate; for I think he might have

have ſtated it in a much more advantageous Light, and have proved his Aſſertion without laying himſelf open to this Objection.

The Author goes on bandying about this Inſtance, as far as pag. 28. and then declares that after all 'tis nothing to the Purpoſe; which muſt be acknowledged to be a very great Encouragement to his Reader to follow the dim Light of ſuch a Phantom another Time.

I don't know where this Author lives, that he knows ſo little of Money's being aſſeſſed to the King's Tax, nor what he means, pag. 32. by his Hammer and his Anvil; ſurely if a Perſon have Money at Intereſt, he may be taxed for it; but if he lays it out in an Eſtate, he cannot be taxed for the Money he hath not: It is here inſiſted on, that the Leaſehold Purchaſer ought to clear as much Intereſt for his Money, as he might have had elſewhere; but this, I think, is a little equivocal; for if the Eſtate purchaſed be a better Security for his Money *than he might have had elſewhere*, I ſee no Reaſon why he ſhould not be content with a lower Rate of Intereſt.

I have taken Notice of the Author's Craveings for Allowances before; and now in pag. 35. you are entertain'd with ſome of the Fruits which they produce; for, excluſive of the Rent reſerved, we are told, that good Authority, confirmed by long Experience, hath made it appear that 30 *l.* a Year, at leaſt, goes out of an Eſtate of 100 *l.* a Year. If this be true, I dare ſay, the Trouble of paying and Hazard of aſſuring

the Rent, the Trouble of managing the Eſtate, and manuring the Land, muſt be brought into the Account: And after all, to make the ſtated Example ſpeak to his Purpoſe, the Purchaſer, without ever conſulting his own, or applying to the Judgment of his Friend, very tamely gives 1176 *l.* for a Leaſe of 21 Years on this Tenement: And would have given the ſame Money, if the Incumbrances had been as much again, provided the Example would not otherwiſe have anſwered the Author's Drift. And this being taken for granted, the Author finds out by his great Wiſdom, that this Fool of his own Creating is chouſed, and hath not 3 *per Cent.* for his Money; ſurely, while his Hand was in, it had been very eaſy for him to have made him lay it out at one *per Cent.* or leſs, if he had thought fit.

I confeſs, 'tis very badly worth while to follow the Author in thoſe wild and extravagant Arguments; eſpecially where he is really contending with nobody. In pag. 40. he tells the Particulars by which he makes up the Diſburſements 30 *l.* a Year; and he thinks that to bring them to that Height, the Article for managing the Eſtate muſt be taken in: And, notwithſtanding all that he had learnt by long Experience, and great Authority, and which he was ſo poſitive in the Truth of juſt before, he now reduces the Out-goings, Charges and Contingencies to 20 *l.* *per Cent.* And no further off than pag. 46. they grow up again to 30 *l.* of which 5 *per Cent.* is for letting the Eſtate

Eſtate, and receiving the Rent; and another 5 *per Cent.* for an Inſurance from Fire, and other Accidents: And in the next Page he plainly inſinuates, that I have, tho' in another Manner and Method of Computation, made an Allowance to the Tenant for managing and aſſuring the Eſtate. I hope the Author will not take my denying the Truth of this, as a giving him the Lye; for I would not affront him here, becauſe I have the Favour of a few good Words of him for a Page or two.

Whether or no I have taken a right Method of computing and deducting for thoſe Allowances, is the Next thing that offers; and it is objected, that if they are to bear a leſs Rate of Intereſt than that of the improved Rent, ſome very odd Conſequences will follow: Particularly, a Leaſe for a Long Continuance may be of leſs Value than one of a Shorter, on the ſame Eſtate, and that not only where the Out-goings for Repairs or Caſualties are great; but in all Caſes where the Allowances are, to a certain Value, of what Kind ſoever they are. This is, I think, the Strength of the Objection; and to ſupport it, an Inſtance is propoſed, where out of an Eſtate of 100 *l.* a Year, the Landlord hath reſerved 80 *l.* a Year Rent; Here, ſays the Author (tho' the Landlord ſhould take the Rates, Taxes, and Repairs upon himſelf) yet a Term of Seven or Fourteen Years, would be Better than that of twenty-one; and a Leaſe for Thirty-one Years would be worth nothing at all.

To ſet this Matter in a true Light, it will be neceſſary to repeat the Method of Computation recommended by me, in my *Gentleman's Steward inſtructed.* I have conſidered the improved Rent which an Eſtate is, or ought to be lett for, (the Tenant not to be allowed any thing as a Diſburſement, except actual Payments to Rates, Taxes and Repairs) as an Annuity coming in to the Landlord, for which he hath a Security on the Stock and Effects of his Tenant; out of which Rent the Landlord muſt pay out or allow an Annuity to the King, the Poor, the Church, and for Repairs: For which Payment the whole Eſtate is a Pledge or Security: And as the latter of theſe Securities is better than the other, ſo no Doubt but it ought to carry a leſs Rate of Intereſt. To apply this to the Inſtance above-mentioned: The Author hath computed the 100 *l.* Annuity at 6 *per Cent.* and the 80 *l.* at 4 *per Cent.* and ſo the Reſult turns out to be as he ſays, *viz.* That an Eſtate held for 31 Years on theſe Conditions, if Intereſt be computed at 6 *per Cent.* for the Rent, and at 4 *per Cent.* for the Out-goings, will be worth nothing.

But that thoſe Rates of Intereſt are the Author's Choice, and not *mine*, is very plain; for ſince what I all along contend for, is, that the Rate of Intereſt ſhould bear a Proportion to the Security for the Principal; I ſhould be glad to know why the Security for 80 *l.* a Year (and perhaps 15 or 20 *l.* more in Out-goings) ſhould be

be deem'd 2 *per Cent.* better than that for 100 *l.* a Year, on the very ſame Eſtate.

This Repreſentation is unfair; for from pag. 50. to 57. I have made it my Buſineſs to guard againſt ſuch Cavils, by ſhewing that the Rate of Intereſt of both Annuities, are, and ought to be, diſcretionary. The Reader muſt take Notice here, what an extravagant Suppoſition the Author hath recourſe to, in order to raiſe an imaginary Inconſiſtency: *Wiſeacre* muſt be brought to give his Landlord a Fine or Premium in Hand, that he may indemnify him from Rates, Taxes and Repairs: Were I to value ſuch an Exemption, I ſhould conſider the 100 *l.* Annuity at 6 *per Cent.* and that of the 80 *l.* at about five and a half; and then I believe it will appear, that the Value of a Leaſe for a Term of a great Length, will continually increaſe as the Term does.

In pag. 53. the Reader is again impoſed on, by an Inſinuation that I admit of his Cravings for Allowances, and that in common the Reſult of the Author's Computation and *mine* will turn out to be the ſame Thing, or very near it, and therefore no great Matter which of our Methods is adhered to. In the next Page he acknowledges that "Tenants very often oblige themſelves to "bear thoſe Burdens, *viz.* To pay the Taxes and "Repairs, to pay their Rents at a Place and Time "fixed, and to manure the Eſtate, and ſtand to all "accidental Loſſes and Diſappointments: But "then they have always (or ought to have) a "Compenſation for it;" that is, (if I underſtand

the Meaning of the Author) a Man ſhould not give ſo much for an Eſtate, if he is to pay its Out-goings, and to be at the Expence and Charge of Dreſſing the Land, and of Tilling and Sowing his Corn, of Mowing and making his Hay, of buying and ſelling his Cattle, and other Commodities; as he would, if his Landlord were to be at all this Expence.

What is all this intended for; but to try if any body be weak enough to believe, that ſome People, in valuing Eſtates, call the groſs Produce thereof the yearly Value? I challenge the Author to produce one Inſtance, where the Landlord takes upon him the Expence of Management, and to make Satisfaction for Caſualties and Loſſes by an inclement Seaſon, the Death of Cattle, or the like: A Tenant, who rents a Farm, muſt, by his own Labour and Management thereon, get a Maintenance for his Family, and provide *ſomewhat* for Futurity; but how can he do that, if the Rent he pays be as much as the Land (incluſive of his Management) produces? If this be not the Author's Meaning, but by *Yearly Value* he ſhould underſtand, as every other body does, the Rent that a Tenant can afford to pay home after thoſe Charges are ſatisfied; then why ſhould the Leaſehold Tenant, who purchaſes the Eſtate for Term, crave any Deduction? I think this Matter hath not any thing in it, that is difficult or obſcure; and nothing could excuſe my ſaying ſo much about it, but that the Reader may be aſſured I do not agree with the Author (as he pretends

pretends I do) in a Demand ſo ſenſeleſs and unreaſonable,

In pag. 62. the Reverend Author's Suppoſition before-mentioned is again reſumed, and employs the Author for about 16 Pages, to very little Purpoſe: I think the Reader cannot be in much Danger of being miſled, by any thing he'll find in that waſte Paper; And therefore ſhall leave him to put it to what Uſe he pleaſes.

In pag. 79. The Author begins the Enquiry into the Value of renewing of Years lapſed in an Old Term; and after 4 or 5 Pages fill'd up with Words which have no Meaning, States and works up an Example by Three different Methods, one of which he fathers on me, and this is not the Firſt nor Second Time that he hath endeavour'd to make my Rules countenance his Abſurdities: In his Caſe ſtated he ſuppoſes the Rent reſerved near as much as the clear Produce of the Eſtate; in which Caſe (as I before obſerved) my Method is to reckon the Intereſt for the Out-goings, pretty near equal to that for thewhole Rent: But this well-meaning Friend of mine puts a quite different Conſtruction upon me, and (as before) ſays, that my Method is to reckon them at 2 *per C.* leſs; I have at large complained of this Uſage already, and to repeat my Complaints as often as he gives me Occaſion, would be to agree with the Author in his Tautalogy, and to render *my* Obſervations as tireſome and uſeleſs as *his*.

In

In pag. 89. 'Tis boldly aſſerted, that when the Out-goings in Rent, or otherwiſe, is about $\frac{1}{20}$. of the whole Value, (that is about 60 *per C.*) then One Year's Value (by which I ſuppoſe he means 100 *l.*) is a juſt Fine for renewing a Lapſe of 7 Years out of a Term of 21. And who does the Author apprehend he is contending with now? Is not this ſaying the ſame Thing with what his greateſt Adverſaries contend for? Is not 100 *l.* the Amount of $2\frac{1}{2}$. Years Value, where that Value (as here propoſed) is but 40 *l.*

From thence to pag. 99. we are entertained with Reaſons why the Land-Tax ſhould be allowed; a Sketch of what Fines Lay-lords uſually take for Renewals; and a Repreſentation of Facts not true, and of no Uſe to the Author's Scheme, if they were.

After the Eccleſiaſtical and Collegiate Lords have been thus huff'd, and ſnarled at, for about 20 Pages, and told that they have as much or more than they deſerve, the Language is chang'd: For, in pag. 99. they are (like pretty little Maſters) chuck'd under the Chin, and told, that "*'Tis really a Grievance: But, alas! how* "*is it to be removed? If you let the Terms* "*run out, you'll find a leſs Profit than you do* "*now. They will not produce more than* "*Two Thirds* of the improved Value; and "as now managed, they muſt produce more "than a *Moiety* of ſuch Value; and pray, "why ſhould ſuch as you refuſe to take "*Louiſd'ors* for *Jacobus*'s: Beſides, Reverend

"Sirs,

" Sirs, we of the Laity know, that you are in " a publick Capacity, and a great many of you " are poor, and can but badly ſubſiſt without " thoſe Fines; and if *you ſhould* ſtand out, " *your Succeſſors* would overthrow all again: " they would then have the Benefit of your " Right, as well as that of *their* Succeſſors by " granting new Leaſes. To hope that the " Legiſlature will do any thing to put a Stop " to the Iniquity of Fine-taking, is vain and " groundleſs; for this would be to hinder a " Perſon from anticipating and taking into his " Hands the Property of his Succeſſor.

" Beſides, Gentlemen, why ſhould you com- " plain that your Predeceſſors have granted " away your Right; When you know they had " nothing for it? 'Twas thrown into the Bar- " gain and only of Uſe to them to put off their " own: Why, you have the Privilege to uſe " your Succeſſors in the ſame Manner; and " what great Matter is this? You are *Strangers* " to them that went before you, as thoſe who " ſhall ſucceed are to You; Pray, Gentlemen, " don't the Laity do the ſame Thing, and even " where their own Iſſue are affected by it? " 'Tis true, they are not ſuch Fools to give it " away, and that Iſſue of theirs have the Be- " nefit ariſing by it; but 'tis not for my pre- " ſent Purpoſe to take Notice of that, becauſe " perhaps you'll be apt to think, that makes a " Difference. As to your Right Reverends, " and Venerables, and ſome other Members " of your Societies that are rich, they may,

" by

" by way of Munificence, do ſomething for " the Benefit of Society: But I hope nobody " will inſiſt upon raiſing the Fines for Re- " newals of lapſed Terms: That would be " very hard; for the Lay-Tenant hath held " them for many Years, and *always* renewed " for about one Third of the real Value of the " Renewal: And truly, I think, that Perſon " who will not believe that one Third of the " real Value of any Thing is as much as that " Thing is worth, muſt be abandon'd to all " Senſe and Reaſon."

This I take to be a juſt Paraphraſe on what the Author hath ſaid, upon the Subject of renewing Lapſes in Church and College Leaſes; and as to what follows in this his firſt Book about the Value of Money, and its Weight; It being not at all to the purpoſe, I ſhall wave it, and proceed to his Second Book.

This Book (after telling what and how we are to learn by it) begins with finding Fault with Dr. *Halley*, on account of his Tables of the Probability of Life; and the great Objection is, that the Terms to which the Value in the ſeveral Periods of Life are correſpondent, do not vary by proportional Degrees.

This Objection, or *chief Exception*, (as the Author calls it) hath in my Opinion no Force at all in it, unleſs it be to be taken for granted, that the Chances of Vitality (as the Gentleman delights to expreſs it) keep Pace with the Years of Life: But is there any thing more obvious than the contrary of this? Are not ſome

Periods

Periods of Life more fatal than others? Is any thing plainer, than that Death makes greater Havock on Perſons of ſome particular Ages, than on thoſe of others; and that thoſe Periods do not immediately ſucceed one another? How dogmatically ſoever the Author hath affirmed, that the Facts cannot be accounted for by any thing that ever happens in Nature, I think, that nothing leſs than better Evidence from Reaſon and Experience, than that which the Doctor was furniſhed with from thoſe Bills of Mortality, ſhould influence the Judgment of any body againſt his, in Favour of this Author's Hypotheſis.

The Cavil on this Head is continued as far as pag. 154. and the Author by his unintelligible, prolix Way of Argument, hath taken a great deal of Pains to render the Matter obſcure, and hath advanced a great many Inconſiſtencies, as the Conſequences of the Doctor's Hypotheſis, which in Fact flow only from his own imaginary Notions of the gradual Decreaſe in Value, thro' the ſeveral Periods of Life. It is not worth while to take Notice, how the Author hath afterwards taken upon him to amend this Scheme, by propoſing two Methods of his own, very different from one another; one of which is liable to the ſame Objection with this; And the other, contradictory to the Facts exhibited by the *London* Bills of Mortality, as well as thoſe of *Breſlau*; and proceeding on ſuch a decreaſing Scheme as is perfectly whimſical, having not the leaſt Foundation in Nature.

This brings me to the Page, where the Objection, which I took Notice of before, againſt my Tables, is firſt mentioned: For here the Author affirms, "That the Tables neceſſarily muſt be "wrong, becauſe at different Rates of Intereſt "they give us ſuch a Value of an Annuity for a "Life, as does in Fact make the ſame Life "equal to a different Term of Years."

I am ſure the Author will not deny his Meaning to be this, *viz.* That taking out of the Table of the Value of an *Annuity for Life* the Years and Parts anſwering to any particular Age, (which let be 7 for Inſtance) under the ſeveral Rates of Intereſt, and again ſeeking in the Table of *Annuities for Years*, the ſame Years and Parts under their reſpective Rates of Intereſt, the Number of Years correſpondent to them will be different *.

Example.

In Table 4. of my *Gentleman's Steward*, &c.

A Life of 7 Year old, at	4.	5.	6	7.	8.
Is worth	17.32	15.30	13.42	11. 79	10.69
Thoſe Years and Parts found in Tab. 1. under their proper Rates of Intereſt ſhew, in the firſt Column the Number of Years certain that each correſponds to	30.17	29.5--	28.4--	25.8--	25.1--

* *N.B.* My Error in the *Gentleman's Steward*, pag. 81. occaſion'd by taking the Matter in this View, I ſhall retract hereafter in the Supplement to this Tract.

Thus

Thus having explained the Objection, and put it in its full Strength, let me examine whether the Charge againſt the Tables, *viz.* *That they therefore muſt neceſſarily be wrong*, be well grounded, or no?

The Author, pag. 157. takes it for granted, that he who hath an Annuity for the Life of a Perſon, hath it for ſo many Years as that Perſon lives; and ſurely, if this be not ſelf-evident, nothing can be ſo: But the next is almoſt ſelf-evidently falſe; for the Purchaſer doth not buy it for ſo many Years as the Perſons ſhall or may *probably* live; but he doth, or ſhould buy ſo many *Chances* as he hath any valuable Probability of enjoying.

And now give me leave to advance a Principle that I believe nobody will controvert.

The Value of any Thing on the Chance of a Perſon's living One Year, is more than that on his living the Second, and that on his living the Second; is better than that on his living the Third; and ſo on. Let it be granted.

The Right to an Annuity, expectant on the Chance of a Perſon's living from the Age of 100 Years and upwards, is of ſmall and inconſiderable Value, and may in theſe Calculations be diſregarded.

This Poſtulatum, I preſume, will not be deny'd; But if it be, let it inſtead of 100 Years be ſet to any other Period, the Argument will not be affected by it: And from the Premiſes, I think, will plainly follow this

COROLLARY.

An Annuity for a Life of a given Age is expreſs'd by a Series of Probabilities equal in Number to the Number of Years from the given Age to 100, *and decreaſing in Value (according to ſome determinate Ratio) as the Years of Life increaſe.*

My Adverſary will ſurely allow this Corollary to be true; if he does not, I think, it is not to any Purpoſe to take any Pains with him; But if he does, then he muſt alſo allow, that "The Value of ſuch an Annuity is expreſs'd "by a Series of the preſent Values of the for-"mer Series, Intereſt being diſcounted at a "given Rate for each particular Sum to its "Time of Payment."

And now, methinks, the Author ſhould ſee the Impoſſibility of reducing this Series to a Number of Years certain, and valuing it as ſo many equal Payments by any rational Method. 'Tis true a Perſon may *compound* for the Value of the Chances in his Way, but *compute* it he cannot.

If I were contending with a Perſou capable of apprehending an Algebraical Proceſs, it would be eaſy to convince him of the Truth of what I have aſſerted; but as he hath diſclaimed any Knowledge that way, and declared a very mean Opinion of any Deductions that ariſe from ſuch Arguments, it is not on his

his Account, but to ſatisfy ſuch Readers as are more uſed to, and therefore have a greater Regard for, ſuch cloſe and concluſive Reaſoning, that I make the following Scrutiny into the Truth of what we have both advanced on this Head.

Let the Enquiry then be about an Annuity on a Life, which hath no valuable Expectancy of living more than five Years.

And let it be ſuppoſed, that the Contingency of the five ſeveral Payments are juſtly expreſſed by this Series, *viz.*	The firſt ---,9 The ſecond --,8 The third ---,6 The fourth -,5 The fifth ----,2
	Total 3. 0.

And now if the Amount of 1 *l.* in a Year at any Rate of Intereſt be made equal to r, the Value of the foregoing Series will be in ready Money $= \frac{,9}{r} + \frac{,8}{r^2} + \frac{,6}{r^3} + \frac{,5}{r^4} + \frac{,2}{r^5}$

It will give me no Concern, if the Author I am contending with ſhould deny the foregoing Poſtulatum, or this Conſequence deduced from it; ſince every Perſon that underſtands it, will readily and at firſt View admit both.

Next, let me ſtate this Matter according to the Author's Method of Valuation; And here the Sum of the Contingencies muſt be the ſame with thoſe before, that is they muſt be

$= 3$;

$= 3$; for this is taken for granted by both of us.

Then, by his Method, the propoſed Annuity is to be valued as an Annuity for 3 Years certain, Diſcount allowed at a given Rate of Intereſt. Let r be as before, and then

$\frac{1}{r} + \frac{1}{r^2} + \frac{1}{r^3} =$ the Value of his Annuity in ready Money.

If both theſe Theorems be true, then

$$\frac{,9}{r} + \frac{,8}{r^2} + \frac{,6}{r^3} + \frac{,5}{r^4} + \frac{,2}{r^5} = \frac{1}{r} + \frac{1}{r^2} + \frac{1}{r^3}$$

Which being reduced is, $,1r^4 + ,2r^3 + ,4r^2 - ,5r - ,2 = 0$.

The only Value of r in this Equation (that can be applied to this Purpoſe) is 1. And hence, if both the above Methods be true, the Value found by them can admit of no Diſcount at all; And this was before very judiciouſly expreſſed by Mr. *de Moivre*, in his Preface, pag. 6. where (to obviate this Objection, which he was aware might be ſtarted by ſuch Perſons as this Author, who becauſe they cannot underſtand a Mathematical Demonſtration, are apt to depreciate it, and advance the ſenſeleſs Chimera's of their own Brain in Oppoſition to it) he ſays that "No Eſtimation can be made "of the Expectation of Life, but as 'tis com-

"pared

" pared with an Annuity that admits of no " Diſcount."

Leſt the Author ſhould think that the above Theorem, however true in itſelf, may admit of other Values of r, that will ſuit his Purpoſe: Let me for once ſuppoſe the Rate of Intereſt to be allowed the Annuitant, that of 5 *per Cent* then will $r = 1.05$. And if the above Equation be wrought out by this Value of r, it will tell the Author that 1 is equal to 1, 262625 *&c.* And ſurely, his Underſtanding muſt be very bad, if he cannot diſcover the Abſurdity of this; and the like will follow from conſidering any other Rate of Diſcount whatſoever.

I might very eaſily ſhew, that let the Ratio of the Chances or Probabilities be what it will, the Co-efficients to the *Negative Terms* in the Theorem, will always be equal to thoſe of the *Affirmative ones*; and conſequently r will be $= 1$. But perhaps the Reader will think that I have already ſpent more Paper than is neceſſary upon this Subject; however, as the Author builds his whole feeble Structure upon this very ſandy Foundation, and is in many Places ſo immoderate in his own Praiſes, and in his Triumphs for his ſuppoſed Victory; It was neceſſary to ſhew the Fallacy of his Scheme; and let me once more appeal to the intelligent Reader, whether by my Hypotheſis, the Purchaſer doth not actually buy the Contingency that he enjoys, *viz. A Series of Chances equal in Number to a certain Number of Years, and*

and decreaſing in Value by certain Differences For every Term of which Series he hath a Diſcount at a Rate of Intereſt agreed on, until the Time that it becomes due. And on the contrary, Is it not very plain, that by this Author's Way of ſtating the Value, the Purchaſer doth not buy the Chances which he is to enjoy, but inſtead thereof an Annuity for a certain Number of Years; which he takes by way of Compoſition: And in diſcounting Intereſt conſiders the Value of the Sum expectant at the End of the firſt Year, as equal to that expectant at the End of the twentieth Year; although the real Value of the former is perhaps five times as much as that of the latter.

I am not at all ſurprized that the Author denounced War with every body that hath treated of this Subject; for as he ſet out on ſuch fallacious Principles, no wonder that his Computations would not agree with any others. Error is very prolifick, and the Performance I am conſidering is a flagrant Inſtance of it: For, in ſhort, this ſingle Blunder influences and quite invalidates the whole Work; And yet the Gentleman is ſo full of his Abilities, and on the Succeſs of having, as he thinks, diſcover'd an Inconſiſtency in Mr. *de Moivre*'s Rules, that his Vanity becomes as intolerable as his Ignorance.

From pag. 158. to 190. Dr. *Halley* and Mr. *de Moivre*, are Objects of his Fury; and ſad Work he makes with them, not forgetting now and then to have a Fling at the Conſequence

quence of different Rates of Intereſt ſhewing different correſpondent Terms; and boldly aſſerting, that there can be no Method of adjuſting the Value of an Annuity for Life, but by computing it as a Term of Years certain: And p. 171. he cannot conceive, why the Dr. deſerts that eaſy plain Method of Calculation, and purſues another that is long and laborious. I hope when the Reader hath conſider'd what I have before ſaid on this Head, he will very plainly ſee a Reaſon for Dr. *Halley*'s ſo doing; which doubtleſs was on this juſt View; *viz.* that the former is a *Wrong*, and the other a *Right* Method of computation.

From p. 190, to 233. we are entertained with a long unintelligible Argument, about loſeable Days in every Year of the Term's Continuance; wherein the Author ſhews his Skill in the Doctrine of Chances to be equal to that in the other Branches of Mathematicks: For he goes on playing Dr. *Halley*'s ſeveral Propoſitions one againſt another; and becauſe he is not capable of underſtanding the Dr. accuſes him of a great many Inconſiſtencies: Poor Man! he cannot ſee that the Chance of a Man's dying in the Year 1740, is worth any thing, unleſs, and until, he hath lived out the Year 1739; which is as much as to ſay; If a Man is entitled to the ſecond Prize to be drawn in a Lottery, his Chance is worth nothing, until the firſt is actually drawn: Is it to any Purpoſe to argue with this Gentleman!

In p. 233. He begins to encounter another Adverſary, who hath advanced, that *The beſt Life is equal only to a Term of* 14 *Years*; Tho' this Poſition be a little too groſs for our Author's Stomach, yet he profeſſes that the Author hath ſome *very good Thoughts on the Subject*, in which he readily concurs with him: I think he does not any-where particularly mention what thoſe *good Thoughts* are, and therefore leaves the Reader to gueſs at them.

And ſurely it cannot be very difficult to gueſs from the main Drift and Deſign of both theſe Authors, in what it is they concur ſo amicably: For this Author, from p. 6, for about 120 Pages, and *The Author that he refers to*, thro' his whole Performance, have both laboured very hard, to run down the Proprietors of Church and College Lands.

I have taken Notice in its proper Place, what this Author hath advanced, and intend to conſider the other hereafter: And for that Reaſon ſhall wave it here. After our Gentleman hath treated this friendly Adverſary of his with a great deal of Ceremony, and good Manners, as one that was unwilling to differ with a Perſon, who was purſuing the ſame laudable Deſign with himſelf; He fills up about 26 Pages, to ſhew that, in his Judgment, his dear Friend was a little miſtaken, and that he ought to have reckon'd a good Life at a little more then 14 Years Continuance: And in this amicable way, his Friend

leads

leads him by the Hand (I thank him) to the End of his Second Book.

Where the Author begins with telling the World, that Mr. *Richards*'s *Performance is no better than any of the reſt*; and is angry that it ſhould be introduced with ſuch Pomp and Solemnity, and the Tables be ſaid to be framed by a Mathematical Rule.

This is not the firſt time that the Author hath mentioned Rules, built on Mathematical Certainty, with Contempt, and dealt more freely than becomes him, with the Authors or Inventors of them, whom he here calls the *Father and Grandfather* of Errors very groſs and extravagant.

I am ſo far from thinking my Performance better than the reſt, that I am conſcious of a great many Errors and Imperfections in it: And particularly am ready to acknowledge, that the Inſtance pick'd out by the Author is One, and, I hope, the greateſt that is there to be found: And I take this Opportunity to correct it: [*It is in p.* 98, *under* 5 *per C. and for the Ages* 12, 12, 12. *let it be made* 19, 13. *and let the Numbers under it be likewiſe corrected as I hereafter direct in the Supplement.*] I am far from blaming the Author for this Rebuke; on the contrary, he would have deſerved my Thanks, if he had ſubjoined the Excuſe which he himſelf makes for me, in his p. 389. *viz.* that ſuch an Error might ariſe from Equating between the Two Rates of Intereſt, 4 and 6 *per Cent.* But his not

taking Notice of this Excuſe, until he had led the Reader thro' a Labyrinth of Perplexities for 130 Pages, (enough to deſtroy his reflective Faculty) is not a very candid Uſage: Neither is the Error itſelf of ſo monſtrous a Size as to deſtroy the Reputation of the whole Calculation; for it amounts to no more then $\frac{2}{5}$ of a Year's Value, and the Detriment that a Purchaſor can poſſibly receive thereby is not more than a Guinea upon 50 *l.* But had it been much greater, why ſhould it give the Author ſuch a Surfeit, ſo that he ſhould never after be able to digeſt the Rule by which the Tables were made? or why ſhould he in the very next Paragraph fall ſo inhumanly on Mr. *de Moivre*, and charge him (who only laid down the Method) with the Errors and Imperfections of the Calculations? To make but one Step from a Conſequence, in forming a Judgment of the Truth or Falſhood of a Propoſition, is doubtleſs bad Logick as well as Mathematicks; but for any Perſon to pronounce ſuch Judgment, who perceives at the ſame time that the Conſequence doth not flow from the Propoſition, but from an Error in ſome intermediate Link of the Argument, deſerves a worſe Name.

I cannot think it neceſſary to defend my Tables againſt the Objection raiſed in p. 269. Our Author knows very little (even leſs than I before thought he did) of Calculation, that cannot account for the ſmall Errors he here complains of. Was it neceſſary to run the Tables to more than 2 Places of Decimals? And will

not

not Errors unavoidably happen in the right-hand Figure? This is Hint enough to any body that knows any thing of the Nature of the Calculation; and I am not much concerned to illuſtrate the Matter to ſuch Authors as will be talking out of their way: Only here again I deſire it may be placed to *my Account*, and not Mr. *de Moivre*'s; for it certainly does ariſe from a Defect in the Calculation, but then it is ſuch an Imperfection as is not very blameworthy; it does not amount to $\frac{1}{10}$ of a Year's Value, which was the utmoſt Perfection I aimed at, or pretended to.

I am again attacked by the Author, p. 270. with the Nouſenſe before-mentioned about the Length of the Term, when compounded with different Rates of Intereſt: If what I have before ſaid about this, does not convince him of his Blunder, 'tis, I think, impoſſible to make him ſenſible of it; and ſo let him indulge himſelf in his Ignorance, ſince it pleaſes him: And as he ſays, p. 277. leave Mr. *de Moivre* and myſelf (who, I believe, underſtand one another better than he does either of us) to accommodate the Matter between ourſelves.

His Skill in Survivorſhip, and the Marrow of all his moſt profound Learning, from *p.* 266 to 370, are fully diſplay'd: And all that he there advances will ſtand or fall on the Truth or Falſhood of this ſingle Propoſition; *viz.* "The Value of an Annuity on the Lives of any "Two Perſons, and the Survivor of them, is "found by ſubtracting the Value of their Joint-

"Lives

" Lives from the Sum of the Values of their " Lives ſingly taken."

And methinks I ſhould be able to explain the Truth of this Propoſition ſo as to convince every Perſon whatſoever, endued but with common Senſe and Reaſon, of the Truth of it; to do which let me aſſume:

Two Perſons A, and B. of equal Age, hold an Annuity of 10 *l.* in equal Shares, for the Term of their Joint-Lives, and the Whole to the Survivor of them.

Poſtulata:

1. Let it be granted, that the Life of each, ſingly taken, is worth 10 Years Value; And,
2. The Right on their Joint-Lives is worth ſix Years Value.

It is very plain then, that the right of A, during their Joint-Lives being 5 *l.* a Year, is worth to be ſold 6 Years Value. *viz.* 30 *l.*

And the Value of the Chance of A's Survivorſhip muſt be 10 *l.* a Year at 4 Years Value; *viz.* 40 *l.*

The Life of A ſingly taken, being 10 Years Val. this muſt be true; for elſe the whole is not equal to all its Parts.

By

By the like Argument the Right of B. will be found of the ſame Value, *to wit*, 70 *l.* Hence 'tis plain,

The Value of the whole Annuity is 140 *l.* that is, 14 Years Value; that is, 6 Years the Value of their Joint-Lives, ſubtracted from 20, the Value of both their Lives ſingly taken.

Or, if this be not ſufficiently evident, take it thus:

The Value of each Life, ſingly taken, is ——— ——— ———	10 Years
That on their Joint-Lives is but 6 Years; and therefore, the above Value is *leſſened* by the Hazard that one of the two Perſons *may die ſooner*.	Years 4
And ſurely it cannot be deny'd but the Value muſt be equally *increaſed*, by the Probability that one of the two Perſons *may live longer*; viz.	4

Hence I think 'tis plain, that the Value of the Annuity, to continue till both the Lives are dead, is worth 14 Years Purchaſe, altho' the ſame, to continue only till one of them dies, is worth no more than 6 Years Value.

If I ſhould fill up 100 Pages more on this Argument, as the Author hath done, I don't know how to make it out in a plainer Manner; and I perſuade myſelf, that this is ſufficient

to

to ſatisfy the Reader, and to ſhew that the tedious Method by him laid down, doth but more perplex the Thing; and that all his Windings and Turnings, his hard, new-coin'd Words, and unintelligible Objections, do but raiſe a Miſt, and render the Object *more obſcure*, inſtead of *enlightening* it.

To urge the Abſurdity of reckoning the Survivorſhip for both Lives, becauſe it is impoſſible that both ſhould ſurvive, is ſaying juſt nothing to the Purpoſe; for, 'tis the Value of the *Chance* of either of the Lives ſurviving that is worth 4 Years; whereas the *Aſſurance* of ſuch Benefit (and one or the other muſt neceſſarily ſurvive) is worth 8 Years Value.

And thus, I think, all that is ſaid here, as well as what is afterward advanced by the Author, in relation to three Lives, and the Survivor, might have been very well omitted: For, notwithſtanding his dogmatical Air of Aſſurance, 'tis plain that his Knowledge in the Doctrine of Chances is very ſuperficial.

Having tired himſelf and his Reader ſufficiently, with his *retrograde* Motion, the Author tells us, *p.* 311, that he intends to move Direct, and to overthrow the *Hypotheſis* of Mr. *de Moivre*, and conſequently demoliſh the whole Structure that it ſupports.

Whether it be that my Foretaſte of the Author's Skill in this Affair, gives me a mean Opinion of his Ability on the Subject, or that his own Diffidence, *p.* 313, of being able to expreſs

expreſs himſelf intelligibly, diſcourages me from a cloſe Application to what follows, I ſhall not determine; but freely acknowledge, that I do not underſtand his Meaning in the following Pages, any further, than that he ſeems very anxious his Reader ſhould believe, that, after a Term expired, on or before which 'tis probable a *Nominee* (to uſe a Word of his own making) may die, the Chance of his exceeding that probable Term is of no Value at all. If I take him right, the Argument will run thus; That A. will live 40 Years, is an equal Chance with that of his dying within one Year: And therefore, perhaps, an Annuity on his Life is of equal Value to a Term of 20 Years abſolute; and hence (ſays our wiſe Author) that Life in Reverſion of an abſolute Term of 20 Years is not worth a Farthing.

But now it comes out, *p.* 323, that this Author hath never ſeen Mr. *de Moivre*'s Treatiſe: What! was ever any body before ſo loſt to Honour and Ingenuity, as to cavil with an Author, for the Space of almoſt 500 Pages, on the Subject of a Performance which he had never ſeen? This is a freſh Inſtance of his ſincere Purſuit of Knowledge, and of the Honeſty and Integrity of his Intentions: For he had heard that the Propoſitions relating to this Subject were Mathematically demonſtrated by that Author: And, leſt any of them ſhould be ſo very plain as to ſuit his Underſtanding, and ſhould contradict what he was fully determin-

ed ſhould be true; why, truly he thought it moſt adviſeable not to look into it.

But, *p.* 324, the Champion begins to think himſelf a Match for Dr. *Halley* in Mathematicks, and ſets out with affirming that the Doctor's *Mathematical Scheme is fruitleſs and vain, and grounded on wrong Suppoſitions.* To ſee how he behaves himſelf for about 20 Pages, muſt, doubtleſs, give the Reader a very great Idea of his Abilities: But then, he ſpoils all by diſcovering that he hath not rightly repreſented the Doctor; but what of that? he hopes the Reader will admit, that he hath repreſented the Matter as the Doctor himſelf *ſhould* have done it: And to mend the Matter, attempts to expound the Doctor's Scheme: But this is ſtill worſe; for here he expoſes himſelf to the laſt Degree, and plainly diſcovers to the World, that his Knowledge in Geometry (tho' he had been engaging one of the greateſt Men the Age affords in that Science) doth not extend ſo far as the Notation commonly known and uſed by every body that treats on that Subject. The Doctor hath all his Conſideration until he comes to *p.* 363, which Interval contains ſuch an incoherent Jargon of Words, as I believe nobody will take Pains to conſider.

The Attack againſt my Tables is here begun again, and the Error before-mentioned (which I believe the Reader will think a very pardonable one) is again pick'd out; and leſt it ſhould not, in the Form it ſtands, and the Conſe-

Conſequences that attend it, create Prejudice ſufficient to invalidate the Whole; the Author, *to make it more viſible*, as he expreſly ſays, hath drawn it out by way of Scheme; and, that every body may point at me, he hath dreſs'd me up (not in my own, but) in another Fool's Coat; for, right againſt each Value are placed a Term of Years, which, by his Method of Computation, are ſuppoſed to be the abſolute Term that one of the three Lives ſhall live; and in the preſent Inſtance they amount to about 60 Years: The Good-nature and Candour of this Proceeding muſt be very plain to every one, who conſiders that ſmall Differences in Value, on ſuch long Terms, anſwer to a great many Years Continuance. Thus, for Inſtance, 100 *l.* payable after 40 Years, is worth but 12 *l.* more than the ſame Sum payable after 80 Years; and (as was before taken Notice of) the Error here referred to, alters the true Value of 50 *l.* no more than one Guinea; whereas the Term anſwering to ſuch an Error is 14 Years. I make no Pretenſions to being correct in the Calculation to the laſt Place of Decimals, and believe nobody thinks it very material that the Tables ſhould be ſo: And yet, if an Error in the Column of 8 *p. C.* have eſcaped me, which amounts to no more than $\frac{08}{100}$, our Author would preſently find out that I had miſtaken 10 Years, in the Length of the Term that the Lives were ſuppoſed to ſubſiſt: And what is worſe, this ungenerous Treatment, and unfair Repreſentation, hath not Ig-

norance to plead in its Excuſe ; for, in *p.* 168, the Author himſelf, upon another Occaſion, takes Notice of this Effect of the Numbers, when applied to the Term of Years to which they correſpond.

I cannot properly give an Anſwer to the Objections raiſed and magnified againſt my Tables, without repeating often the Author's abſurd Hypotheſis; *viz.* The Value of the Chances on the Probability of Life may be reduced to a Number of Years, and when ſo reduced, the Value of an Annuity for ſo many Years certain (Intereſt diſcounted for the ſame Sum every Year at any Rate given) is the Value of the Annuity on ſuch a Life. 'Tis this falſe Principle hath blown up the Gentleman's Vanity: This (by him) eſtabliſhed Maxim is the Law by which Dr. *Halley*, Mr. *de Moivre*, and myſelf, are to be tried ; and, becauſe Reaſon, Demonſtration, and Common Senſe, ſeem to be on our Side, and declare the Law to be iniquitous, they are objected againſt as Evidence : And hence, no Wonder, that (before ſuch a Judge) the former is repreſented as *Irrational*, the Author of the Rules and Theorems for Computation, *a Knave or Blockhead*, and the latter, as *a Dupe and Drudge to both.*

Thus again, *p.* 368, we are told, the Rule by which the Tables were made, muſt needs be falſe ; for the whole Term of Continuance of 3 Lives (in thoſe Tables valued at 16. 19 Years) is 61 Years, but taking it in Parts, according to the Method there laid down by dividing

dividing the Intereſt therein among 4 fictitious Perſons, the Author cannot make the whole Term amount to any more than 47 Years. If what hath been before ſaid, about the falſe Concluſion, ariſing by this erroneous Way of Computation, be not ſufficient to open the Eyes of the Author, I think his Blindneſs is incurable.

The Author goes on groping out Errors and Inconſiſtencies, in my Tables and Mr. *de Moivre*'s Rules, (which by his Talk of makeing Calculations by, any body would have thought he had ſeen, if he had not declared the contrary) as far as *p.* 385. And all that is there advanced, will, I think, loſe its Force, when it is conſider'd, that the Decreaſe of the Probability of Life does not proceed regularly thro' the ſeveral Periods of Life; (and that they do not, let the *London* Bills of Mortality teſtify) That the ſmall inconſiderable Error of $\frac{1}{10}$ only, or leſs, in the Tabular Values, makes a Difference of a great many Years (ſometimes 30) in the Terms that correſpond thereto; and that the Value of the Series which expreſſes the Probability of Life, cannot by any means be reduced to, or made equal with, that of an Annuity for Years certain, where the ſeveral Terms of ſuch Series admit of any Diſcount: And hence the Repetition of his former Arguments, which fills up 4 Pages, might have been ſpared.

The next Thing that is undertaken, is to ſhew, that Mr. *de Moivre*, in his Rule for valuing

valuing Annuities on 3 Lives, admits of more Chances, than ought to be placed to Account for the Benefit of the Annuitant.

It is very eaſy to ſhew, by the Author's Blunders, for the Space of 25 Pages, on this Head, that he hath not at all improved himſelf in the Doctrine of Chances, ſince he penn'd the Argument, about the Survivorſhip, on two Lives; and, on the contrary, that Mr. *de Moivre*'s Theorem, which ſhews that an Annuity on three Lives, of equal Age, and the Survivor is made up of an Annuity for the three joint Lives, added to three times the Value of the Chance, that any One of them ſhall ſurvive the other Two, is ſo plain and evident, that (after what I have before ſaid on the Survivorſhip of two Lives) it would be not only waſting of Paper, to no good Purpoſe, but alſo an Inſult upon the Underſtanding of the judicious Reader, to ſay any Thing in its Defence; and therefore ſhall let that Matter reſt upon the Force of its own Evidence, and the Reader's due Conſideration, in Oppoſition to all the *poſitive Aſſertions*, *clear Appearances*, *juſt Calculations*, *ſufficient Proofs*, *Impoſſibilities*, and (let me add) nonſenſical Windings and Turnings, and clamorous Harangues, with which the Author, like a valiant Champion, with Intent to trample down all that ſtand in his Way, hath ſtuffed the following Pages.

'Tis again affirmed, *p.* 409, that the Author never ſaw Mr. *de Moivre*'s Treatiſe; ſurely this is a Declaration that ought not to have

have been repeated; not that it would have been of any Uſe to him if he had ſeen them; for (*p.* 421) he doth not pretend to a Rule that is *Mathematically demonſtrative* (and what other Kind of Demonſtration a Calculus of this Kind doth admit of I cannot imagine); *for he doth not underſtand Algebra.* Truly he might have ſpared himſelf the Trouble of that Diſcovery, for nobody would have ſuſpected it: And, indeed, he muſt have had a Skill that way, ſuperior to every other Artiſt, if he could have brought what he there advances, to ſuch a Demonſtration.

As to the Example quoted from me, in *p.* 402, and the Calculation in *p.* 412, his Miſtake, in the former, about the Chances that ſhould be placed to the Account of the Purchaſer; and, in the latter, about which is the beſt Life, one of 10, or one of 12 Years old, may be eaſily diſcovered, without any Skill in Algebra; but this is like the reſt of this Gentleman's ſufficient Proofs.

In *p.* 419, the Author begins his own Rule, for valuing Annuities on two and three Lives, and the Survivor: But becauſe he, in the next Leaf, (as I before obſerved) acknowledges, that poſſibly his Rule may *not* be capable of mathematical Demonſtration; and becauſe I can take upon me to affirm, that the Abſurdity and Falſity of it *is* capable of mathematical Demonſtration, and alſo obvious to the common Senſe and Underſtanding of every body that is capable of reaſoning on this Subject;

ject; I ſhall take no further Notice of it, but ſhall diſmiſs the Author, after I have, to render theſe Obſervations as uſeful as I can, epitomized the whole Argument in the following Compendium.

OBJECTION I.

In taking of Leaſes, for Years certain, the Out-goings, viz. *Rates, Taxes, Repairs, Caſualties, Inſurance of the Rent, and paying it in, together with the Trouble and Expence of managing of the Eſtate, ought to be deducted out of the* Yearly Value: *And then what remains is the Annuity which the Tenant ſhould purchaſe: And, for the Money he lays out therein, he ought to be allowed a Diſcount at* 6 per C. *But moſt Perſons, in computing the Fine to be paid for thoſe Leaſes, diſregard Part of thoſe Out-goings,* &c. *Therefore their Computations are not right.*

ANSWER I.

If, by *Yearly Value*, be here meant the Produce of the Eſtate, without regard to the Out-goings in the Objection mentioned, then the Objector is not much in the Wrong; but that, I believe, is hardly ever the Caſe; the general Meaning of the Word, is, doubtleſs, ſo much as the Eſtate ſhould Lett for

for to a Rack-Tenant, who is to pay home the Rent, manage the Eſtate, bear the Accidents, Diſappointments, and Loſſes happening by the Death of Cattle, the Overflowings of Water, or the Inclemency of Weather: And now, when *Yearly Value* is thus underſtood, and a Tenant would come in for a Term of Years, by way of Fine, under a leſs than rack Rent, and would take upon him to pay the other Charges of Taxes, *&c.* which the Rack-renter had nothing to do with, he ſhould certainly be deemed Purchaſer of an Annuity equal to the Rack-rent before-mentioned, and out of his Fine ſhould be abated the Value of the Annuity, which he takes upon him to pay, and which the Rack-renter had nothing to do with: But then, as this laſt Annuity is to be firſt borne, and paid, at all Events, doubtleſs, the Leſſee ought to be diſcounted a greater Rate of Intereſt for the Annuity he purchaſes, than he ſhould allow for that which he takes upon him; and, theſe different Rates of Intereſt ſhould be regulated by the Difference of the Security for one and the other Annuity, and bear a like Proportion to legal Intereſt, as the ſeveral Securities do to ſuch perſonal Security, as a prudent Man would venture to lend Money on, at ſuch legal Intereſt.

OBJECTION II.

By Dr. Halley's *Table, the Decreaſe in the Value of an Annuity for Life, and the Terms*

of Years to which ſuch Values correſpond, do not vary by proportional Degrees; and therefore the Terms and Value thereby exhibited cannot be right; and conſequently, the Tables calculated thereby muſt be likewiſe erroneous.

ANSWER II.

This Obſervation, as ſtated, is true, and ſo likewiſe are the Facts, which occaſion the Variation, complained of. Death deals his Darts more copiouſly on People of ſome Ages, than on thoſe of others, as may be ſeen every Week, by the *London* Bills of Mortality; but, whether the *Breſlaw* Bills of Mortality, thoſe of *London*, or, indeed, of any other City, or particular Place, may be a proper Standard; and, whether a juſt Calculation from Facts, collected from ſuch Bills, may be ſufficiently exact for Practice, I will not take upon me to determine; but incline to think, that if proper Perſons would make Collections of Facts in different Parts, the Difficulty of eſtabliſhing this Point, would, for the moſt part, vaniſh.

OBJECTION III.

By Bills of Mortality, &c. *the Term of Years, that a Life, of any given Age, will probably live, may be diſcovered; and therefore, if an Annuity for ſuch a Life be conſtituted as an Annuity for ſo many Years certain*

tain, the Value ariſing (Intereſt at a given Rate being diſcounted) will exhibit the real Value of the Annuity on ſuch Life: But now, by Mr. Richards's *Tables, calculated by Mr.* de Moivre's *Rules, if the Value of an Annuity for Life, at the different Rates of Intereſt, be taken out, and alſo the Number of Years that anſwer thereto, reſpectively, in a common Table of Diſcount, thoſe correſpondent Years will not be the ſame; and hence 'tis very evident, that thoſe Tables, and the Rules by which they were conſtructed, are falſe; for 'tis very abſurd to ſay, that a Life will probably live longer, if his Purchaſe Money be diſcounted at one Rate of Intereſt, than he will, if he were to be allowed a greater or leſs Rate.*

ANSWER III.

To a common Reader, this, at firſt View, looks plauſible enough, but when examined, will prove very fallacious; for let it be noted,

1. Life, and the Term of its Continuance, is a Chance, and as ſuch, it muſt, and ought to be valued.

2. The Chance of a Perſon's living one Year, is better than that of his living the ſecond; and that of his living the ſecond, better than that of the third Year; and ſo on.

3. The Chance of a Perſon's exceeding the Age of 100 Years, is worth ſo little, that it may be diſregarded.

4. It is very evident, that the firſt yearly Payment, conſidered on the Chance of a Perſon's living that Year, is worth more than the ſecond, on the Chance of his living the ſecond Year; and ſo on decreaſing, without at all regarding any Diſcount.

5. Therefore the ſeveral Sums, for which Intereſt is to be diſcounted, decreaſe yearly, for the whole Term of Years which the given Life hath any valuable Chance of living; and, theſe Chances being, in Fact and Reality, the Thing to be purchaſed, the Aggregate of the ſeveral Values (Intereſt reſpectively diſcounted) is the Sum that ſhould be given for it; and that is the Reſult of Mr. *de Moivre*'s Rules, and the Tables made thereby.

6. The Value of all thoſe Chances may, indeed, be ſumm'd up in Years; but, to diſcount Intereſt for the Payments, as tho' they were of equal Value, in the moſt remote, with that of the firſt Year, is to purchaſe the Annuity, not as a Chance, but as a Certainty; and from ſuch a Computation the true Value of the Annuity can never reſult, but by a Chance equally precarious with that of human Life.

OBJECTION IV.

The Abſurdity in Dr. Halley's *Table mentioned before, in* Objection 2*d*, *is not all; for* de Moivre *hath laid down Rules, which, by the Conſequences that flow from them, appear*

pear to be ridiculouſly falſe and ſilly; and Richards, *partly from following the Hypotheſis of the former, and the Theorems of the latter, and partly by his own Negligence and Unskilfulneſs in computing, hath ſet forth Tables, that are in no ſort to be depended on; and hence all that is done by thoſe three Authors, might much better have been let alone.*

ANSWER IV.

As to Mr. *de Moivre*'s Rules, they are not before a proper Judge; the Author never ſaw them, and if he had, owns that he is not capable of underſtanding them; to judge by the Conſequences which flow from them, when tried by ſuch falſe Poſitions, as are mentioned in the 3d *Objection*, is very raſh and unfair.

But, as to what relates to *Richards* in this Objection, he is ready to own his Imperfections, but aſſerts that he made Choice of the beſt (and indeed the only rational) Hypotheſis, and computed by Theorems, which he knows to be infallibly true (notwithſtanding what is here objected); and, as to the Errors charged on his Negligence and Unſkilfulneſs, hopes they are not (a few only excepted) very monſtrous ones; and therefore appeals from this Author to more candid and intelligent Readers.

OB-

OBJECTION V.

If any body ſhould be ſo weak, as to think that the Hypotheſis, Theorems and Tables, have ſome Share of Reaſon to ſupport them, and that the Value of an Annuity, for one Life, *may be tolerably well diſcovered thereby; yet, when applied to Annuities, for* two *or* three Lives, *and Survivorſhip, not one Word can be ſaid for them; for here are brought into the Account of the Purchaſer Chances that he hath nothing all to do with: Here thoſe People are for valuing the Chance of* A. *ſurviving* B. *and the Chance of* B. *ſurviving* A. *and reckoning both thoſe Values in the Survivorſhip, whereas nothing can be plainer, than that only one of them can ſurvive: And the like, or rather much more prepoſterous are they, in their Valuations of Annuities on three Lives.*

ANSWER V.

That Dr. *Halley's*, and Mr. *de Moivre's* Rules are juſt, for thoſe Combinations, is demonſtratively true: And, tho' this Author makes light of the Proof, that is ſupported by mathematical Certainty, other People will be ſatisfied with it: And that more Chances than the Purchaſer is to enjoy, are not brought into his Account, let me explain, as follows.

Let the Value of the Annuity inquired after be, as in the Author's Example, *p.* 392, for 3 Lives, aged 12 Years. It

	Years
It is admitted, that the Value of each Life, ſingly taken, is worth	17,20
The Value of each 2 Lives combined	13,01
The Value of the 3 Lives combined	10,44

The reverſionary Expectation of A. ſurviveing B. is worth a Moiety of the Annuity, for a Term of 17, 20,—13, 01. And the like Expectancy of his ſurviving C. is worth likewiſe a Moiety of 17, 20,—13, 01.

Hence the Value of thoſe 2 reverſionary Expectancies put together, (=4,19 Years Value of the Annuity) is the Worth of the Benefit expectant on the Life of A. to commence on the Death of one of the other two Lives.

And as the Lives are of equal Value, the Benefit expectant on the like Chance to B. and C. will be the ſame; ſo that this Value, *viz.* 4,19, multiplied by 3, is the whole Value of the Annuity, for the Life of the Survivor, to commence immediately after the Death of the firſt Life.

To which the Value of the 3 joint Lives, *viz.* 10, 44 being added, the whole Sum, 23, 01, is the Value of the Annuity.

If there be any Obſcurity in the Argument, thus managed, it muſt ariſe from the Value fixed to each Life, in Reverſion of either of the other 2. Let it be conſider'd, that each Life,

Life, ſingly taken, would ſell for 17, 20; and, that each 2 Lives, jointly taken, will ſell but for 13, 01; therefore each Life is, on the Chance of his ſurviving either of the other, worth 4, 19 Years Value; which (as it is but a Moiety of the Annuity, that he can enjoy on each Chance) for all the 3 Lives makes up, as before, 12, 57; and that added to 10, 44, which is the Value of their joint Continuance, makes 23, 01.

Theſe are the material Objections, made by this Author, and which have furniſhed him with Matter to fill up a Book of 500 Pages: For, all the fine Variety, and beautiful Turn of Expreſſion, all the amuſing Labyrinths, thro' which his Reader is led, are but Finiſhings of the Structure, raiſed upon this general Plan: It would, doubtleſs, have been more adviſeable for him, to have laid out the Labour and Expence of thoſe Embelliſhments in ſecuring the Foundation; for Firmneſs and Solidity ſhould be firſt conſidered, without which 'tis Madneſs and Stupidity to begin to build.

The ESTIMATE of the Value of LEASE-HOLD ESTATES, &c. conſider'd.

I Cannot wholly paſs over the Preface to this, where the Author takes Notice, that the profitable Scheme of raiſing Fines, on Renewals of Leaſes, eſpecially thoſe granted by Colleges and Societies of Churchmen, is very partial and unfair, and of dangerous Conſequence to the *Proprietors* (as he calls them) of Leaſe-hold Eſtates. Had the Word *unfair* been left out in this Aſſertion, I ſhould not have contended with him: For 'tis ſo far *partial*, as that it tends to the taking from one Party what they would unjuſtly detain, and giving it to the other, whoſe Right it is: And the Leaſe-holder is in *Danger* of being thereby deprived of the Means of his Fraud and Oppreſſion, and of enriching himſelf with the Spoils.

The Reader (leſt he ſhould overlook it) is deſired here to obſerve, that the Author thinks a Life equal to a Term of 14 Years; that is (as I take it) that a Perſon of the beſt Age will not probably live more than 14 Years:

And, leſt this ſhould not go down with him, or he ſhould happen to recollect, that he cannot purchaſe an Annuity or Rent-Charge for Life under 12 or 14 Years Value, which, by this Gentleman's Aſſertion, is allowing very little or no Diſcount at all for his Money, he is told that truly ſome accidental Reaſons do often induce People to comply with *exorbitant Demands*; but Humour, or Conveniency, doth not at all alter the real Value of Things.

As to the Number of Years that a Perſon may expect to live, it ſhall be conſider'd hereafter; and I ſhall join with the Author here, and freely acknowledge, that the Fines agreed for, with Landlords of all Kinds, are very often limited and governed by the Neceſſity, or Conveniency, of the Parties, and alſo by the Number of Bidders for the ſame Thing: And I deſire that the moſt may be made of this Obſervation.

It is very notorious, that Landlords, when they know the Tenant muſt, by way of Settlement in Marriage, or for ſome other Family Reaſon, renew his Leaſe: Or, when a Tenement is well ſituated, for the Conveniency of more than one Perſon that is able to purchaſe it, are apt to demand an exorbitant Fine for ſuch Leaſe or Renewal, and to inſiſt on more than it is really worth.

And ſo, on the other Side; a Leſſor may be diſtreſs'd for Money, or his Power of Leaſing may be only *pro Tempore*, and, if he does not fill up the Leaſes, he loſes all the Benefit that would

would ariſe thereby, which inſtead of devolving on his own Family, may perhaps go to a Succeſſor, that is a Stranger to him: And theſe Circumſtances are generally no Secret to the Tenant, nor does he think it any Crime to make his beſt Advantage of them; and this Author will, I believe, agree with me, that, in theſe Caſes, whatever is extorted by the Landlord, or detained by the Tenant, is ſo much gain'd by Fraud and Oppreſſion.

But why then ſhould he, in a following Paragraph, take upon him to ſay, that, tho' the Eſtimates and Reaſonings, about the Value of ſuch Leaſes and Renewals, be juſt, and it ſhould appear thereby that the Sum formerly paid for the like, was leſs than the real Value, it would be, nevertheleſs, unreaſonable now to expect more? What! can Cuſtom alter the Nature of Right and Wrong? And, becauſe (for the Inducements before-mentioned) a Man's Predeceſſor hath ſuffered himſelf to be impoſed on, is it become a Crime to prevent the like Impoſition? Have Eſtates on thoſe Tenures no real Value, that we muſt look back to Cuſtom, to find out how much they are worth? If it does appear, that the Rules eſtabliſhed by Cuſtom *are* juſt and reaſonable, then let them by all means be eſtabliſhed by Law too, and let the Man that endeavours to break thro' them be ſeverely cenſured.

But it is not ſaid that thoſe Rules *are*, but that they *were*, juſt and reaſonable; and herein I agree that they were ſo, and that the

Cuſtom of giving one Year's Value, for renewing a Lapſe of 7 Years out of a Term of 21, Money being at about 10 *per Cent.*, was an equitable one; but the Author ſays, they were in the *Nature* of them juſt and reaſonable: And let him but conſider the Rate of Intereſt, as a Part of the *Nature* of the Rule, and I agree with him again, and am ready to allow not only that they *were*, but that they *are*, juſt and reaſonable; and, that the Fallacy which hath prevail'd ſo long, 'till it is pleaded as a Cuſtom, ariſes not from a Defect in the old Rule, but from a very groſs Error in not following the Rule.

But, What does the Author mean, when he talks of an Injury done the Tenant, by ſinking the Value of the Eſtate, in his Hands, below the Price he purchaſed it at; and taking Advantage of ſuch Tenants, who have laid out Money in Improvements, and of thoſe who have limited, ſettled, or mortgaged their Eſtates, and bound themſelves in Covenants to renew their Terms?

Is not all this inſinuating, that the Tenant is entitled to more Right in the Eſtate than his Leaſe gives him; or, than is in the Power of the Leſſor to grant him? Hath any body been ſo imprudent as to lend more Money upon the Tenant's Right than it is a good Security for? Or, hath any Tenant chowſed his Wife and her Friends, by ſettling another Man's Eſtate, inſtead of his own, upon her? Are the Improvements made by Church Tenants generally

nerally greater than thoſe on Eſtates held of Lay Lords? And do Tenants, when they come to renew, find leſs Humanity, and a ſtricter Adherence to the improved Values on the Part of the Dean and Chapter, than they do from the Lord or the Baronet? In ſhort, doth any Society or Corporation endeavour to exact more of them than the *juſt* and *real* Value of the Renewal? If they do, why, let the ſame Method be taken, as would, in the like Caſe, be taken with the Lay Lord; let the Term run out: For every one of thoſe Leſſors knows what Diſadvantage that will be to him, too well to inſiſt on unreaſonable Fines.

We are told, in the next Place, that the ſinking of Intereſt will not at all warrant the raiſing of Fines; but, as the Author refers, for the Proof of this, to his following Sheets, I ſhall take Notice of it hereafter; and only obſerve, at preſent, that, conſcious of the Inconcluſiveneſs of his Proof, he advances, that tho' ſuch Practice of raiſing Fines could be juſtified, yet when ſuch a Thing is intended, the Tenants ought to have previous Notice, and that the Leſſor ſhould not, on the Abatement of Intereſt, be at Liberty to take any Advantage of it, until the whole Number of Years, in the Leaſe, be expired: Surely, the Author cannot mean by this, that the Leſſor ſhould not have it in his Power to Ouſt the Tenant of his Term *in eſſe*, unleſs he would pay him ſome freſh Conſideration Money; there can be no Shew of

Danger

Danger of any ſuch Thing: No, he only prays, that when a Law is made for reducing Intereſt of Money, and to take Effect at perhaps three Months End, a Clauſe may be added, that notwithſtanding any thing therein contained, *it ſhall be lawful for all Tenants of Manors, holding their Eſtates of Deans and Chapters, and other Eccleſiaſtical Societies, to take the ſame Intereſt they did* 200 *Years ago, for the Money they ſink in the Hands of ſuch Leſſors, for a Term of* 14 *(or perhaps* 40*) Years yet to come*; and the Reaſon for the Clauſe (if any body ſhould be ſo ſcrupulous to expect one) is, becauſe it is neceſſary to conceal ſome Knavery, that ſuch Leſſees have been guilty of, and would be of very great Benefit and Advantage to them and their Families, by enabling them in that time to reduce the Value of their Tenements by ill Huſbandry, Dilapidations and the like, down to the Value that they formerly gave for the Renewals.

The Author is aware, that this Scheme will not be ſo agreeable to the preſent Leſſors, becauſe it would be reſtrictive of any Benefit to *themſelves* (a ſhrewd Hint that he doth not think they have any great Regard to the Benefit of their Succeſſors). Which View, we are told, hath ſo much prevail'd with theſe Leſſors, as to introduce a Practice of enhancing the *Yearly Value* of their Tenements, whereby they have ſerved their oppreſſive Ends, and avoided the Infamy. I confeſs I do not ſee the Connection of this with the former; but I think, it is a plain

plain Hint, (to thoſe who did not know it before) that the Tenants have, for the Time paſt, impoſed upon the Leſſors, not only in the Number of Years Value of the Lapſe, but alſo in the Yearly Value of their Tenements.

And as theſe Leſſors are often ſo unreaſonable as to urge, that they ought to have the ſame Liberty as private Gentlemen have to make the beſt of their Eſtates: It is allowed, that their Tenants do indeed hold of them under certain Covenants, and that the Society *do not* bind themſelves, and *cannot* bind their Succeſſors, to renew their Leaſes at all, much leſs to renew for a ſtated Fine; but, notwithſtanding all this, they are bound, in Juſtice and Equity, to renew, and for the Fine uſually paid.

That is to ſay, about 240 Years ago, a College was poſſeſſed of an Eſtate of 60 Marks (or 40 *l.*) a Year, clear of all Out-goings, and a Power of Leaſing thereof for 21 Years; which Leaſe was generally kept full, by renewing 7 Years as often as ſuch a Lapſe happened; and the Intereſt of Money being at that Time upwards of 10 *per Cent.* Eſtates or Annuities, in Fee, were conſequently worth leſs than 10 Years Value; wherefore the Renewal of ſuch a Lapſe, *viz.* a Term of 7 in Reverſion of one of 14 Years, was then worth, and generally granted for, one Year's Value, or 40 *l.* And hence, the College received conſtantly $\frac{1}{10}$ of the Value of the Eſtate in Fee, every ſeventh Year.

But

But now, after a long Series of Years, it happens that the ſame Eſtate is worth 80 *l.* a Year, clear of all Out-goings; and, as Intereſt of Money is but 5 *per Cent.* Annuities in Fee are worth 20 Years Value; conſequently $\frac{1}{10}$ of the Value in Fee is now worth 160 *l.* which is four times as much as the former.

Thus (where the Facts are ſo) the tying down a College to the antient Fines, would be to diveſt them of three Parts in four of what is their Due; and I doubt not, but theſe juſt Conſiderations have, and always will prevent the Parliament, as well as the Courts of *Weſtminſter-Hall*, (whoſe Eyes are not ſo dim as this Author's) from interpoſing in ſuch a Manner as is here recommended to them, and making ſo free as this friendly Author would have them do, with the Properties of thoſe Societies.

And now, to conclude the Preface, the Author aſſures us, that he is far from being againſt Corporate Bodies making the moſt of their Eſtates, in a *reaſonable Way*, as well as private Perſons: I think he hath no Way of convincing the World of his Sincerity in this Aſſertion, but by defining the Word *reaſonable* contrary to every other Perſon's Meaning, when they make Uſe of it, and annexing Ideas to it, that will not correſpond with it in any other Author whatſoever.

The Author having thus, by way of Preface, told what he intends to be at, he introduces

duces the Performance, for four or five Pages, with Complaints, that his Antagoniſt (*The Author of the Tables, called Sir* Iſaac Newton's) hath impoſed upon that great Man, and the World too, by prefixing his Name as a Sanction to that Pamphlet, which is intended as an Artifice to promote a Deſign of raiſing Fines, and giving the World an extravagant Notion of the Value of Leaſe-hold Eſtates.

I have never had the Fortune to ſee one of theſe Editions, which this Author tells us came out under the Title of Sir *Iſaac Newton*'s Tables; neither do I know of any Perſon that thinks he had any more Concern in them, or in the Application of them, than his own Certificate of *September* 10th 1685, ſets forth: And, if any more be attributed to Sir *Iſaac Newton*, it is the Reader's Fault; for I do not remember that the Author of that Pamphlet, or of the other writ in Defence of it, have either directly, or indirectly, inſinuated any thing like it.

The decreaſing Scheme recommended in that Pamphlet, doth not pleaſe this Author; and therefore he makes an Attempt to correct it: A Leaſe of 3 Lives, he thinks, ſhould be reckoned as an abſolute Term of 21 Years, of which he gives 10 to the firſt Life, 7 to the ſecond, and 4 to the third. The Abſurdity of this decreaſing Scheme is ſo open to the View of every Reader, that it cannot need a Confutation. The Author goes on as far as *p.* 14, groping in the Dark, and ſhuffling of Num-

bers together like a Pack of Cards, to try whether he can thereby make his Game; and all, that he there ſays, is ſo little to the Purpoſe, and ſo much out of Rule, that it would be inexcuſable to take any Notice of it.

After obſerving that, very extravagant Eſtimates have been made of the Value of Lives, founded on Collections from Bills of Mortality; It is allowed that there is no better Way of coming at the Value of thoſe Probabilities; but then, 'tis thought we have hitherto had no Extracts ſufficiently exact. But how ſuch Exactneſs may be obtained, the Author proceeds to ſhew; and particularly thinks, that they ſhould be formed from Regiſters, carefully kept for 40 Years, in little Country Pariſhes, in different Parts of *England*.

Whether what is here advanced, be the beſt Method of coming at a Series, which may juſtly exhibit the Values of the Probability of Life, I very much queſtion; but thus much muſt be allowed, that it would be of great Uſe when eſtabliſhed, and therefore well worth while to endeavour it, by all the proper Methods that can be thought of.

Our Author affirms, *p.* 15, that in order to apply the Bills of Mortality to form ſuch Eſtimates, it is neceſſary that the Number of Inhabitants, and the exact Ages at which they die, ſhould be known: And yet, in the next Page, produces an Extract from one Regiſter for 40 Years, and another for 20 Years paſt, in which he ſays, the Age at which People died

is

is not ſet down; neither can I learn by him, that the Number of Inhabitants was ever computed till the End of the 40 Years: He proceeds, nevertheleſs, with his Calculation, and ſhews that, in thoſe Pariſhes, a Number of Perſons, that ſurvive the ſecond Year of their Age, equal to the Number of the Inhabitants at one Time in being, die in about 26 or 27 Years, and thence concludes, that one Half of them die in a little more than 13 Years; but, in regard that there ſeems to be ſome Increaſe of Mortality on Children, from 2 to 10 Years of Age, the candid Author adds one Year; and then he thinks he may fairly ſubſtitute 14 Years, inſtead of, and as equivalent to, a Life of the beſt Age.

I do not well know how, from the *Data* in the two Examples laid down, any thing to the Purpoſe can be concluded in relation to the Probability of Life: Would the Author ſuggeſt, that becauſe in thoſe Pariſhes as many die in 28 Years, as are there living at any one particular Time, therefore no Perſon hath any valuable Chance of living more than 28 Years? If ſo, then this Conſequence will follow, *viz.* there is not one Perſon there living whoſe Age exceeds 30 Years: But if it ſhould in Fact be otherwiſe, (as doubtleſs it is) and if the Author, upon his Recollection or Enquiry, ſhould find out, that during the Years examined into, ſome People have died there of 70, 80, or perhaps 90 Years of Age, then every Perſon there living hath ſome valuable Expect-

ancy of living to that Age; and conſequently the Suggeſtion is very ill grounded. Whether this be the Author's Meaning or no, ſure I am, his Poſition will not bear any rational Scrutiny; and, yet it is on thoſe Facts thus miſapplied that all his reaſoning about the Value of Eſtates, for Life or Lives, is ſupported.

The Author of the Eſſay (as I have before obſerved) hath taken a great deal of Pains, and put his Reader to the Expence of 14 Pages, to ſhew that the Number of Perſons who died in thoſe two Pariſhes in 28 Years, were ſo far from being the whole, that they were but half the Inhabitants: I think the Truth of that Aſſertion might have been explained in leſs than 14 Lines, and more ſuitable to the Capacity and the Underſtanding of every body. For,

It is very obvious, that if (according to the Intent of the Obſervation) the Number of Inhabitants was the ſame at the End, as at the Beginning of the 28 Years, then they muſt have been increaſed in that Time by as many as died; and I believe it will be imagined, that Death was not more complaiſant with thoſe of whom that Increaſe conſiſted, than with the former Set of Inhabitants; and hence I think it is plain, that in 28 Years, only are a Moiety of the Inhabitants died; and (with ſome Reſtrictions) it might be concluded, that one with another, the Life of a ſingle Perſon there, may be reckoned as a Term of 28 Years; but of what Uſe ſuch a Concluſion would be I know

know not; and yet, I think, this is all that can, with any Colour of Reaſon or Certainty, be deduced from his Extracts, and we are as far to ſeek of what Value the Probabilities of Life are, on a Perſon of a given Age, as before.

The ingenious Dr. *Halley* (whoſe Modeſty as far exceeds that of his dogmatical Opponents, as his Judgment and Knowledge in theſe Studies is ſuperior to theirs) freely acknowledges, that a greater Number of Obſervations would have conduced very much to the correcting of his Tables, and bringing them to a greater Degree of Certainty: And ſurely, we might all employ our Time and Pains much better, in improving on his Labours, than in cavilling at what he hath ſo judiciouſly begun: But then this ſhould be done with Judgment; for what can be expected or depended upon, from ſuch as neither underſtand the Subject they treat of, the Computations they oppoſe, the Hypotheſis they proceed on, nor how to apply the Obſervations they make?

I do not know that any rational Attempts have been made to correct Dr. *Halley*'s Table, that are at all to the Purpoſe, ſince it was firſt publiſhed: I would therefore propoſe, to ſuch as are willing to contribute their Aſſiſtance, to expoſe the Matters of Fact naked and open. That

Extracts from Pariſh Regiſters, where the Number of Inhabitants, (at a Medium) and the ſeveral Ages of the Perſons, at the Time of their Death, can be found out, would doubtleſs

leſs be of good Uſe: Surveys, Rent-rolls, and Manor Books, which expreſs the whole Duration of the Leaſe-hold Intereſt for Lives, and the ſeveral Ages and Times of the Death of the Lives, would be another very good Aſſiſtance: And the Pedigrees of Families, where the ſeveral Times of the Births and Deaths are ſet down, might be brought in to aid the Computation.

But the beſt and eaſieſt Method, as well as the moſt general, that I can at preſent think of, would be that of the Births and Deaths that have happened in particular Families, for the Space of 80 Years laſt paſt: I think that by an Examination of Pariſh Regiſters, and a Collection of Facts that may be recovered from living Evidence, (by Perſons in all Parts of the Kingdom, who are able and willing to promote the Enquiry) ſuch a Number of uſeful Hints would ariſe, as would be ſufficient to eſtabliſh a general Law of the Probability of Life from any given Age, to every reaſonable Perſon's Satisfaction: And why may not thoſe Extracts and Obſervations be publiſhed Monthly in the *Magazine*, or ſome other of our publick Papers? Surely the Expence of a Poſt Letter, can be no Objection to any Perſon, when it tends to a Diſcovery of ſuch general Uſe; and I dare ſay, the Authors of any of thoſe Papers would readily inſert any thing of that Kind that came to their Hands, provided it be drawn up in a conciſe Manner, as may very eaſily be done: For, two or three Pages filled in this

Manner,

Manner, would doubtleſs be of as much Uſe to the Venders of that Paper, as the like Number on any other Subject whatſoever.

I have taken ſome Pains to extract from our Chronicles, the Dates of the Births and Deaths of the Royal Family, from King *William* the Firſt, to his preſent Majeſty, in a Lineal Deſcent, omitting Collaterals, and ſupplying intermediate Branches; and it appears, that 21 Generations paſs'd away in about 704 Years; and hence, one with another, the Child outlived the Parent 33½ Years; and to ſtrengthen this Suggeſtion, I have by me 20 Pedigrees of noble Families, moſt of them running thro' almoſt as many Generations as the former; and all which put together, the ſame Term of about 33 Years turns out to be the mean Time of Continuance: I have carried this Matter ſtill a little further, and carefully computed (by as many Inſtances as I could) the Age of the Succeſſor at the Death of the Parent, thro' thoſe ſeveral Succeſſions; and (in a Medium) the ſame turns out to be 24 Years. Hence I think there cannot be any great Error in ſuppoſing, that a Perſon 24 Years old may probably live 33 Years longer.

Again, from Dr. *Heylin*'s Liſt of the Biſhops, I have carefully computed, thro' thoſe of divers Sees, how long they have, one with another, continued therein; and this I find to have been about 13 Years.

I ſuppoſe it will be admitted, that, generally ſpeaking, our Biſhops are at their firſt Conſecration

cration of the Age of 50 to 60 Years; and if it be conſidered, that they are ſometimes tranſlated to other Sees, by the Will and Pleaſure of the Monarch, I think a Year or two may be added to the Term of their Continuance above-mentioned; and that then it may be fairly concluded, that a Perſon of 55 hath an equal Chance to live 14 or 15 Years. I do by no means affirm, that theſe Computations are abſolutely certain; neither do I expect that the Concluſions ſhould influence any body's Judgment any further than they are convinced of the Validity of the Arguments and Facts on which they are ſupported: It is, I confeſs, ſome Pleaſure to me, when I conſider, that the Numbers thus ariſing (without any Violence uſed to them) do ſo exactly agree with thoſe in Dr. *Halley*'s Table.

I might here (on much better Foundation than ſome other Authors, treating on this Subject, have eſtabliſhed, with a great Air of Aſſurance, their Maxims) take Notice, that the Differences betwixt Dr. *Halley*'s Table, and one that might be compiled from the *London* Bills of Mortality, which have been very regularly publiſhed for a pretty many Years, are ſmall and inconſiderable; but as the Number of Inhabitants, and ſome other *Poſtulata* neceſſary for that Compariſon, may be a Matter of ſome Diſpute, I rather chuſe to wave it, till I have more proper Materials for that Purpoſe; in the mean time every body is at Liberty

berty to make what Uſe he thinks fit of this Hint, for his own Satisfaction.

The Succeſſion to Dignities annexed to particular Families, is another Method of making a tolerable good Gueſs at the Length of a Generation of Mankind, and would, I believe, ſpeak the ſame Language of that of the Kings before-mentioned, and be a further Confirmation, from Facts, of the Propoſition advanced: I hope ſome other Perſon better furniſhed with Materials for this Purpoſe, and of more Leiſure to digeſt them, will purſue the Enquiry, and (as far as he can) apply them to the different Ages of Life; and if this ſhould eſtabliſh the Doctor's Tables, it will be of Uſe to the World, and will reſcue thoſe Tables from the Envy and Calumny of ſuch as blindly oppoſe them without any Foundation.

But to return to the Author, with whom I am contending: I ſhould have been glad if more and better Obſervations of his had fixed the *Ratio* of the Number of Perſons dying in a Year, to that of the whole Number of Inhabitants in any Place; for that would have removed a Part of the Difficulty, of comparing the *London* Bills of Mortality with thoſe of *Breſlaw*.

Altho' my Obſervations, on this Head, be not ſtrictly concluſive, yet they abundantly ſhew, that the Author is egregiouſly miſtaken as to the Number of Years that a Life is to be conſider'd as likely to ſubſiſt: And hence, what can be expected from his Proceeding on

that Suppoſition? Surely, it were Time loſt to purſue him any further on this Head, and examine into his decreaſing Scheme before-mentioned, for finding out the Value of two and three Lives, and that of the Reverſion after them.

In *p.* 26, he is aware that many Objections may be made to what he hath advanced, but is willing to make the Reader believe that he hath ſufficiently taken off the Edge of them; and if he hath not fully anſwer'd them, yet the Conſequence of any Error flowing from his falſe Concluſions is very ſmall; and therefore is ſo indulgent to the Reader, as not to tire him any longer with his extravagant Suppoſition, or the Defence of it.

The ſecond Chapter treats of Leaſes for Years, and begins with expoſing of *the Tables for renewing Church and College Leaſes*, and that of *the Value of thoſe Leaſes conſidered*; becauſe, as this Author ſays, they have conſidered thoſe Leaſes in the *firſt* Place, as Annuities clear of all Deductions; and *ſecondly*, as an abſolute Sale for the Terms that they are Leaſed for.

If, by *Annuities clear of Deductions* the Author means, as the Words import, and can make it out, that the Treatiſes he refers to, have directed to compute the Value of a Leaſe on an Eſtate, as an Annuity equal to the Rent that ſuch an Eſtate ſhould lett for, to a Tenant who was to pay no Rates, Taxes, Repairs or Incumbrances; and that the Leſſee is to bear

thoſe

thoſe Payments, and have no Allowance for them in his Fine: If this be the Caſe, then his Charge is very juſt, and no Perſon in his Senſes would endeavour to defend ſuch a Method of Computation: But, doth not this Author miſtake in what he here aſſerts? I have both thoſe Pamphlets before me; and as to the firſt of them, I cannot find that it ſays any thing at all to that Purpoſe; and the Pages referred to in the other, ſeem rather to make uſe of the Argument by way of Compariſon between Leaſes held of Lay-Lords, and thoſe Church Holdings; and ſo far the Argument is juſt and uſeful: But if that, or any other Author, hath aſſerted that no Notice at all ought to be taken of the Out-goings, which the Leſſee is to take upon himſelf, nor any thing deducted on that Account out of the Fine, for ſuch Leaſe or Renewal, I differ from him, and refer for my Sentiments to what I have formerly publiſhed on that Head.

As to the ſecond Thing objected to thoſe Pamphlets, *viz.* that they conſider the Leaſes ſo granted as an abſolute Sale for a Term, which this Author thinks ſhould rather, and more properly, be called a Leaſe or Mortgage, and not a Sale; indeed, I think he is much in the right, as to that of a *Leaſe*; but to what Purpoſe this quibbling on a Name ſerves, I cannot imagine.

What is ſuggeſted about Reſtraints from committing Waſte, hath no Force at all; for I ſhould be glad to know, what Benefit a Power

of committing Waſte can be to a Perſon who purchaſes an Eſtate in Fee? unleſs it be the cutting of Timber, or taking to his Uſe ſome other Valuables which he finds on an Eſtate, and which the Seller takes care to make him pay a valuable Conſideration for, in the Purchaſe Money: And then, all the reſt that the Author ſays about Reſervation of Rent, Conditions for Recovery of thoſe Rents, *&c.* comes in and is taken Notice of under the former Objection.

To this is ſubjoined a pretty Account enough of the Original of exacting Fines by Eccleſiaſticks: The Author ingenuouſly owns, that Eſtates have in all ſucceſſive Ages increaſed in their yearly Value, and that, on the contrary, the Value of Money hath decreaſed: On which he ſays, that Church-men about two or three Hundred Years ago begun to take Fines, when they lett out thoſe Lands for a Term of Years, rather than raiſe their Rents (no doubt but this raiſed a great Out-cry againſt them by the Tenants at that time): But, as their Succeſſors were not obliged to ſuffer the Farmer or Leaſeholder to hold out the Term which was on ſuch Conſideration granted them, it became neceſſary for the Parliament to interpoſe, and by an Act to give a Sanction to ſuch Grants: And here our Author drops an Expreſſion, that plainly diſcovers the Inſincerity of what he aſſerted at the End of his Preface: For who can believe, that *He is for thoſe Societies making the beſt of their Eſtates,*

in

in a reaſonable Way, when he ſeems to lament that the Law doth not reſtrain them from takeing any Fines at all, and from raiſing their Rents, which he acknowledges to be much below the Value of their Eſtates? This Practice of taking Fines, he acknowledges, is now become a lawful one; but then calls it only, as it were, a way of anticipating their Revenues by way of Mortgage: I think this Compariſon doth not go on All-fours; but be that as it will, I agree with him, that raiſing the Rents of their Eſtates would have been more adequate to the Nature of the Thing, and a much more proper Remedy than that of taking Fines; as it would have more effectually anſwered the then Claims of all Parties, and as their Eſtates would have ſtood on the ſame footing with the Demeſnes of Lay-Lords, who have, in all Ages, raiſed their Rents, as the Nature of the Thing, from the Alteration of the Value of Money, and that of Lands, required, without any loud Clamours againſt them for ſo doing.

Had the Law that interpoſed at that Time, enabled thoſe Leſſors to lett out their Eſtates for a Term of 7, 14, or even 21 Years, for the beſt improved Rent they could get, ſo long as the Tenant was puniſhable for Waſte and ill Huſbandry, as the Tenants to Lay-Lords are, and enacted that ſuch Grants ſhould be binding on their Succeſſors, and that all Grants or Leaſes made in Conſideration of a Fine or Fore-gift ſhould be void; I ſay, had K. *Henry* 8th, when he was, as this Author expreſſes it,

ſtripping

ſtripping thoſe Eccleſiaſticks, done this, the preſent Proprietors would have felt the Benefit only, and the Complaints of the Injur'd would have been long ago huſh'd; and this, among other Acts of that great King, would have been commended by ſome, and condemned by others.

In *p.* 32 and 33, the Author ſeems very fond of conſidering the Church Tenant as a Mortgagee in Poſſeſſion: Now, tho' this be but a lame Compariſon, as I hinted before, I ſhall venture to conſider the Matter in the ſame Light, and ſee whether the Propoſition advanced, *viz.* "The renewing a Lapſe of "ſeven Years, in a Leaſe for 21, is worth "but one Year's Value," can be demonſtrated, admitting the following *Poſtulatum*, *viz.* "The "Money paid for a Renewal ought to be no "more than that the Tenant may, by the End "of his Leaſe, be paid by the clear Profits of "the Eſtate the principal Sum he laid out "with Intereſt."

In handling this Point, 'tis neceſſary that I premiſe what is to be underſtood by *Yearly Value* in the Propoſition, and by *Clear Profits* in the Petition; for, the fixing different Ideas to thoſe Names, is, as far as I can perceive, the great Cauſe of Difference betwixt this Author and thoſe he writes againſt.

The Author of *The Value of Church and College Leaſes conſider'd*, *p.* 9, puts an Inſtance of an Eſtate of 100 *l. Yearly Value* (excluſive of the reſerved Rent); and, by his Calculation, thinks,

thinks, that the Renewal of a Lapſe of 7 out of a Term of 221 Years is worth 250 *l.* Indeed he ſays nothing there about Taxes and Repairs; but, if I may be permitted to ſay as much in his Behalf as he ſeems to be intitled to, by what he ſuggeſts in *p.* 10, where he touches on thoſe Out-goings, I think a candid Reader ſhould allow, that he had a Regard to them likewiſe in ſtating his *Yearly Value*, at leaſt ſo far as is uſual to conſider them in the purchaſing of Lands in Fee.

But now the Author of the Eſtimate would be underſtood to have put, in all reſpects, the ſame Inſtance, and calls his an Eſtate of the *Yearly Value* of 150 *l.* ſetting the reſerved Rent at 50 *l.* And that he may not fail of making the Reſult of his Calculation ſpeak out to his Purpoſe, he aſſeſſeth the King's Tax at 21 *l.* a Year, and will be allowed 20 *l.* a Year for Repairs, and 2 *l.* more for other Incidents; and this being all deducted, brings out the *Clear Profits* to be 57 *l.* and no more.

The Example propoſed being thus explained, let the Ideas annexed to the Term *Yearly Value*, be that of the Rent which a Rack-Tenant ought to give for an Eſtate, where the Landlord takes upon himſelf to diſcharge the Rates, Taxes, Repairs, and other Out-goings; (always excluſive of the Expence of Management, paying home the Rent, inſuring it, and ſtanding to the common Loſſes ariſing by a wet Autumn, dry Spring, *&c.* which another Author is ſo unreaſonable as to crave Allowance for

for out of the Rent;) and let *Clear Profits* mean, the Sum that the Eſtate will produce to the Leſſee, after all thoſe Payments and Out-goings (which he generally takes on himſelf) are deducted out of his Under-Tenants Rent.

And now, I believe it appears, that the Authors are talking about Eſtates very different in Value: The former (if I underſtand him right) means one of 100 *l.* a Year clear Profits; and the latter, very evidently, fixes his clear Profits at 57 *l.* a Year: And the *Yearly Value* of the firſt in the Senſe of the other (and in the Definition above fixed) is 193 *l.* whereas the latter hath ſtated his (in the ſame Senſe) at 150 *l.*

The Difference between theſe two Authors, on the Meaning of the Words, being thus reconciled, and the Example wrought out agreeable thereto, by both their Methods, the Reſults will agree to within 40 *l.* of each other.

And now all that remains neceſſary to diſcover the Truth or Falſity of the Propoſition before-mentioned, is to fix the Rate of Intereſt, that ought to be allowed the Purchaſer, for the Money he lays out on ſuch a Leaſe or Renewal: Here the Author of the Eſtimate, *&c.* claims 8 *per Cent.* and reckons up a great many Reaſons (ſuch as they are) for this immoderate Demand: "The Security is very "ſcanty, a Houſe may fall down, the yearly "Value of the Eſtate may ſink; he cannot "commit Waſte, nor take any accidental "Advantages

" Advantages by Mines of any Kind; he is re-
" ſtrained from plowing up Meadow Grounds,
" and diſplanting Orchards, and other valuable
" Plantations; his Rent ſometimes lies in his
" Tenants Hands, and ſome of it he may
" loſe, *&c.*" And therefore he expects to be allowed full 4 *per Cent.* more, that is, twice as much as the Purchaſer of Lands of Inheritance, altho' there is not in all this Catalogue one real Diſadvantage that he labours under, but what the Tenant in Fee is liable to, as well as himſelf: For,

As to the Inſufficiency of the Security, Abatement in Value, Decay of Buildings, Arrears of Rent, and Loſs by Tenants, it is the ſame in either Caſe: And, as to the Power of committing Waſte, of any Kind, Who in his Senſes would ever value his Right the better (being Tenant in Fee) for that he might, if he pleas'd, ruin his Eſtate? Timber, Mines, *&c.* if known to be of any Value, when an Eſtate is purchaſed, always increaſe the Purchaſe-Money; and if raiſed or diſcovered afterwards, the former cannot amount to much in the Space of 21 Years, and the latter is a Matter merely adventitious, and ſuch a Chance as is not worth the mentioning.

It muſt be acknowledged, that in proportion to the Security for the Money advanced, the Rate of Intereſt ought to be adjuſted; but this is not all that is to be conſidered; the Length of the Term for which the ſame is ſecured, the Certainty or Probability of its

being paid as ſoon as it becomes due; the Difficulty that may attend the calling in the Principal, by converting the Security into ready Money, on any Emergency that may call for it, and ſome other Circumſtances that may happen; are Inducements that will and ought to influence Purchaſers to ſink their Money on greater or leſs Intereſt.

Thus, for Inſtance, a Rent-Charge on an Eſtate of much greater Value, is better ſecured than the Remainder of the yearly Income of that Eſtate: A Sum of Money ſunk on an Annuity to continue 20 Years, is better, and therefore may be ſunk at a leſs Intereſt, than the like Sum, when the Annuity will pay it off in five Years: A Sum laid out on good Security, to be repaid with compound Intereſt, at a Number of Years to come, (which is the Nature of an Eſtate in Reverſion) is better diſpoſed of, (by ſuch as do not want the preſent Income) than if lent on the ſame Security at ſimple Intereſt, becauſe the Intereſt is often let back, 3, 4, 5 or 7 Years: And again, Money depoſited in the publick Funds may very prudently be left there, on leſs Intereſt than it ſhould be lent on Landed Security, in regard that the Principal may be had in at a Day's Warning.

Thus, from the Nature of the Security, Term of Continuance, prompt Payment of the Intereſt or Profits, as well as of the principal Money; from the Likelihood of the Security's continuing as good as it is at the Time of advancing

vancing the Money; as alſo, perhaps, from ſome other Conſiderations ariſing in particular Caſes; Annuitants, Mortgagees and Purchaſers, juſtly may, and always will govern themſelves, as to the Rate of Intereſt, for the Money they lay out.

To apply what I have ſaid to the Matter in hand, and to fix what Intereſt may reaſonably be expected by the Purchaſer of any Annuity or Rent-Charge, Eſtate in Fee, either in Poſſeſſion, or Reverſion, or for Life, Lives, or Years abſolute, or other different Tenures, is attended with a pretty deal of Difficulty; and muſt in a great meaſure be left to, and determined by, the Judgment and Diſcretion of ſuch intelligent Perſons as are thoroughly acquainted with all the Circumſtances of the Security, *&c.* enquired after: But nevertheleſs, ſome general Rules may be laid down, which may be of Uſe to inform the Judgment, and which may take in all the Common-caſes, and be a ſufficient Guide to the Generality of Purchaſers, by ſhewing them how much Diſcount they may juſtly inſiſt upon.

In the firſt Place then, it will be neceſſary to fix ſome ſtated Value on Money, ſome way or other applied; and, for the preſent Purpoſe, let it be that of its legal Intereſt on a Loan, and let that Security be the worſt that a prudent Man would at 5 *per Cent.* lend Money upon; which I take to be a Security barely perſonal: For, in this Caſe, the Lender hath no Pledge at all for the Repayment; he is not ſure that

his Money will continue out more than ſix Months; he cannot (with good Manners) call for his Intereſt till ſome conſiderable time after it becomes due; nor can he call in the Principal again under, perhaps, ſix Months Notice; and ſhall be deem'd very rigid, if he do not then ſhew ſome kind of Forbearance. To this may be added, that a good perſonal Security may, thro' ſome unforeſeen Acts of Providence, turn out to be deficient.

Let this then be the Standard, to which we may compare the Intereſt of Money any other way applied or laid out; and as the Security, prompt Payment of Intereſt, *&c.* ſhall (every Circumſtance being duly weigh'd and conſider'd) direct, let the Rate, which it is reaſonable to expect, be adjuſted.

And, *firſt*, as to the Money depoſited in the publick Funds on Parliamentary Security.

Here the Security is unexceptionable; the Term as long or as ſhort as the Lender thinks fit; the Intereſt duely paid; the Principal always in a Readineſs; the Security will never grow worſe; and, in ſhort, Money thus placed, is diſpoſed of to the beſt Advantage that can be by way of Loan, in every reſpect: For, tho' it be not at compound Intereſt, it is to all Intents of Advantage the ſame; for the Intereſt is paid at a Day, and may immediately be made Principal: The Value of Money thus placed, a Lender might be glad to have fixed at $3\frac{1}{4}$ *per Cent.*

2. Sinking

2. Sinking a Sum of Money, by way of Purchaſe of an Annuity, or Rent-Charge on an Eſtate of much greater Value, I think, deſerves the next Place; eſpecially, if the Annuitants Circumſtances admit of it, and the Annuity do not become payable till after a convenient Number of Years *in eſſe*; in which Caſe, I think it is, in ſome reſpects, as good or better than the former; and is only worſe than that, in regard that it may not be ſo readily turned into Money, or the Annuity, when payable, may not be forth-coming at a Day. Under this Head may be ranked Annuities in Fee, for Terms of Years certain, or for Term of Life or Lives; and accordingly the Intereſt muſt be moderated, perhaps from 3 ½ to 4 ½ *per Cent.*

3. Next to this, let me rank that of advanceing Money by way of Mortgage, on an ample Security, and unqueſtionable Title. That this is not ſo good a Diſpoſition as the former, (taken in the beſt Senſe) is very plain: For, altho' the Security be very good, and will always continue ſo, yet the Intereſt may not be promptly paid; the Mortgager may redeem at any Time; and the Mortgagee is not ſure of having his Money when he wants it: The Value of Money, on all Sorts of Mortgages, properly comes under this Head, and will be leſs or greater as People come nearer to the Value of the Security, or as that Security from the Nature of the Tenure is more or leſs precarious: Or again, as the perſonal Security and

and Behaviour of the Mortgager may add to or diminiſh the Confidence in the Lender; all which duly conſider'd, the Rate of Intereſt may, I think, lie betwixt 4 and 5 *per Cent.*

4. Another Way of laying out Money, is by way of Purchaſe of Eſtates in Fee: But this, even if ſuch a Purchaſe could be ſuppoſed ſubject to no Out-goings, would by no means be as good a Diſpoſition of Money as the former; becauſe the Security is not ſo ample, nor the Profits ſo infallibly certain; the Commodity is not ſo vendible, and the Intereſt or Profits, once loſt, can never be retrieved: But worſe than all this, Purchaſers muſt ſubject themſelves to a Load of Incumbrances, as Rates, Taxes, Repairs, *&c.* which is and muſt be conſidered as a Rent-Charge to be paid out of the Eſtate in the firſt Place, and which cannot be redeemed or bought off.

Again, If ſuch an Eſtate conſiſts chiefly of Houſes, or Buildings, or Things of the like Quality, ſubject to Decay; this is a Circumſtance which will require due Conſideration: For, beſides that it will enlarge the Annuity paid out; thoſe Out-goings will be conſtantly increaſing, the ſubſtantial Parts of ſuch Buildings will go to Decay, and the Yearly Value ſink on that Account. There are divers other Incidents and Diſadvantages that attend the laying out Money in this Way, and which ought to be duly weigh'd; for every prudent Purchaſer will inſiſt on an Encouragement ſuitable to the Riſque he runs. The Rate of Intereſt

tereſt muſt, on thoſe Purchaſes, be various, as the Nature and Quality of the Lands; *viz.* For Tenements in Fields, where there is little or no Doubt of their being well Tenanted, 4 *per Cent*; at other Places, where liable to Accidents, by Floods or the like, perhaps 4 ½; others on ſome other Accounts worſe, at 5; Good Houſes, and well ſituated, at 5 ½ or 6: Ancient Buildings, whoſe principal Parts are decay'd thro' Age, may be a bad Purchaſe at 7: Mills, *&c.* (unleſs in good Repair, and well accuſtomed) may be better let alone on any Terms.

5. As to Eſtates for Terms of Years, on Lives, or for Years determinable on Lives; the former differ from, and are a worſe Purchaſe than Eſtates, in Fee, in regard to the Term of their Continuance, and to the Difficulty that a Perſon may meet with in diſpoſing of the Remainder of his Term, if it ſhould be for his Convenience ſo to do.

And the latter are ſubject to both theſe Inconveniencies, and alſo to that ariſing from the Precarioufneſs of the Term; and, (which renders the Difficulty of getting a Purchaſer to take it off a Man's Hands, ſtill greater) the Aſſignee muſt hold by Lives not ſo eligible to him as thoſe of his own Nomination: Thoſe Tenures are ſubject to Out-goings, Decay of Buildings, *&c.* in like manner as Eſtates in Fee are: And, generally ſpeaking, where all other Circumſtances but that of the Tenure, are the ſame, they ought to be ſold at a Diſcount of 1 *per Cent.* more than thoſe.

6. I cannot

6. I cannot at preſent think of any Application of Money leſs eligible, by way of Purchaſe, and for which the Adventurer may, juſtly, expect a greater Rate of Intereſt, than the laying it out on Leaſes for Lives, on an Eſtate conſiſting of Mills, or other Buildings, of long ſtanding, and liable to great Expence in repairing; eſpecially in ſuch Places where the Income of the Eſtate depends on ſome particular Branch of Trade: Thus, for Inſtance, I have known a Set of fulling Mills, that in Times paſt hāve produced 200 *l.* a Year, which, partly thro' Decay of Trade, partly on account of the Age and Decay of the Materials with which they were built, which render'd them unfit to do the Buſineſs they were deſigned for, to any good Purpoſe; have, for many Years, hardly produced enough to diſcharge the Rates, Taxes and Repairs: And what a Condition is the Tenant in, that is under Covenants to yield them up in good and ſufficient Repair? And now, in ſuch a Caſe as this, if a Man were to ſink Money in a Leaſe for 3 Lives, and to provide againſt his being a Loſer, only by inſiſting on a higher Rate of Intereſt; I am convinced, that, although the Eſtate may be in good Repair at the Commencement of the Leaſe, it may be juſt and reaſonable that he have a Diſcount of 10 *per Cent.*

From what I have obſerved on this Head, it will appear, that it requires a good Share of Judgment, to aſcertain the Diſcount between the

the Seller and Purchaſer; and that, whoever attempts it, ought to regard, with the utmoſt Impartiality, the Advantages and Diſadvantages that attend each particular Caſe; and lay aſide all undue Ends or Views of ſerving either Party.

I hope the Reader will not condemn me for the Length of this Digreſſion, ſince it is not foreign to the Subject I am upon: And ſhall now take the Liberty to purſue the Example I begun with, and ſee whether it confirms or confutes the Propoſition before laid down as to the Value of the Renewal of a ſeven Years Lapſe.

In the Example before us there is no Mention of the Quality of the Eſtate; let it therefore be ſuppoſed to be one of the beſt kind.

And as the Annuity paid out is well nigh $\frac{2}{3}$ of the whole yearly Value, I think a Diſcount of 4 *per Cent.* for that, and of 5 *per Cent.* for the whole, is a fair Allowance on both Sides.

And now, if, on this View, the Example be wrought up by my Method of Computation, it will ſtand thus:

	Years.	
150 *l.* a Year at 5 *per Cent.* for 21 Years is worth	12,82	
Deduct the ſame for 14 Years	9,90	
Then 150 *l.* a Year by the Remainder	2,92-438	*l.*

Again:	Years.	
93 *l.* a Year for 21 Years, at 4 *per Cent.* is worth	14,01	
Deduct the ſame for 14 Years	10,55	
Then 93 *l.* a Year by the Remainder	3,46	*l.* 322
This laſt Value ſubtracted from the other, leaves the Value of the Renewal of 7 Years		116

This Reſult doth not ſpeak the ſame Language with the 82 *l.* 15 *s.* of this Author, although it be cook'd as much as poſſible for that End.

The Author boldly aſſerts, that a third Part of the yearly Value is generally reſerved by thoſe Societies by way of Rent; if this be true in his Neighbourhood, it is very different from all the Church-Holdings that have as yet come within my Obſervation: But ſuppoſing that to be the Fact, and that the Rates, Taxes and other Out-goings, are as exorbitant as in the above Example; then I do not deny but in that, or the like Inſtance, *viz.* where the Out-goings are to the yearly Value, as 93 to 150, one Year's Value (excluſive of the Tax) is but 16 *l.* leſs than the Value of the Renewal: But now, in my Turn, let me ſtate another Inſtance, much more common than that above, and for once ſee how the Difference of the Payment outinfluences the Value of the Renewal; and how far from the Truth, the Propoſition

Propoſition laid down, and ſo ſtrenuouſly inſiſted upon, will appear to be.

A Tenement conſiſting of a good Farm Houſe and Out-Houſes, well ſituated, and fairly worth 30 *l.* a Year (the Landlord paying 1 *l.* a Year to the Lord's Rent, and, *communibus annis*, to the Rates, Taxes and Repairs 4 *l.* a Year more) let it be enquired what the Renewal of a Lapſe of 7 Years out of a Term of 21 is worth.

	Years.	
An Annuity for 21 Years at 6 *per Cent.* worth	11,76	
14 Years at *ditto*, worth	9,29	
		l.
Then 30 *l.* a Year at	2,47	74

Again,

An Annuity for 21 Years at 4 *per Cent.*	14,01	
14 Years at *ditto*	10,55	
Then 5 *l.* a Year at	3,46	17
The laſt Value ſubtracted leaves the Value of the Renewal		57

And now, whenever this happens to be the Caſe, *viz.* that the Rent and other Payments out, do not exceed $\frac{1}{6}$ of the Yearly Value, the Renewal is worth 2 Years Value: And hence, I believe, 'tis very plain, that the Propoſition laid down is very abſurd and untrue.

By our Author's own Method, and allowing him his very unreaſonable Demand of 8 *per Cent.* the Renewal amounts to 45 *l.* which is an evident Overthrow of what he hath ſo often affirmed in Defence of Mr. *Ecroid*, whoſe Value is but 29 *l.* I appeal to every body who underſtands the Nature of Diſcount, whether (ſuppoſing every thing as in the Examples ſtated) the Purchaſer have not Compound Intereſt for his Money, and whether at the End of the Term he will not (as the *Poſtulatum* words it) "be paid by the Profits of the "Eſtate, the principal Sum he laid out, with "Intereſt."

And now, after all this, muſt the Author be thought to be one of thoſe he deſcribes *p.* 49, *whoſe laudable and honeſt Views are a Diſcovery or Support of Truth, and ready to pay Submiſſion to the Force of it?* Surely to ſuppoſe him ſo much under the Dominion of Prejudice, or Intereſt, as not to be able to diſcover the falſe Reaſoning, and inconcluſive Arguments which he hath advanced, and endeavoured to maintain, is to diveſt him of his rational Faculties, and pronounce him incapable of any Conviction; 'tis to brand him with a Degree of Weakneſs, which his Method of Writing gives

gives no room to ſuſpect; or to charge him with an Ignorance of Facts that are plain and evident to the moſt vulgar Capacity.

I thought I had done with this Author; but cannot forbear taking Notice of his Candour and Integrity, in relating a Matter of Fact, p. 69. He tells us that "None of the Revenues of Biſhops, Deans, Arch-deacons, Prebends, Canons, Rural Deans, Maſters and Fellows of Colleges, Profeſſors, *&c.* Augmentations of Livings, Compoſitions, or any other Revenues of the Clergy, are charged with any Sort of Taxes." —— Did the Author thus uncover himſelf, with Deſign to ſhew his cloven Foot? Or hath he ſome hidden Meaning, which when known will wipe off the ſeeming Falſity of the Aſſertion? What can the Revenues above-mentioned conſiſt of, that they bear no Share of the Burthen of Rates and Taxes? Are their Demeſne Lands any-where exempted? Do the Tenants that hold of them by Leaſes, for Years, pay no Taxes? And do they not always pay leſs Fines for renewing their Leaſes, on account of the Tenements being rated and aſſeſſed? And if they have no Allowance or Deduction out of their reſerved Rents, are they not likewiſe conſidered on that Account in their Fines? But, perhaps, the Author means that thoſe Eſtates are not double taxed; he is grieved that the Tenant and his Landlord (being an Eccleſiaſtick (are not both taxed for the ſame Eſtate.

This

This Inſtance of the Author's Veracity in relating a Matter of Fact, will be ſufficient to guard the Reader againſt paying an implicit Aſſent to what he aſſerts; and ſurely, there can be no great Danger of any ill Effect the Performance can have on any Perſon that reads it with the leaſt Circumſpection.

I have done with the Author of the Eſtimate; and now let me, by way of Retroſpection, take Notice how the ſeveral Authors, that would depreciate the Value of Leaſehold Eſtates for Years or Lives, and eſtabliſh the Reaſonableneſs of the old Fines on Renewals, diſagree with one another, about the Reaſons for ſo doing, and the Method for bringing it about.

Thus, to begin, one pleads the Illegality of raiſing thoſe Fines, and (if you'll believe him) almoſt thinks, that the Tenants might maintain a preſcriptive Right, not only to a Renewal in general, but to a Renewal on the ancient Fines; for, what elſe can the Author of the Enquiry mean, by aſſerting that *cuſtomary* Tenants have a Right to renew their Leaſes on Payment of a reaſonable Fine; and that, *Finis vaga et incerta non eſt rationabilis?* And the putting it on this Iſſue, is, I think, giving up all the Arguments brought by other Authors, on account of their being of no greater Value, *&c.*

Another Author (a little doubtful whether the Law would determine in favour of ſuch Preſcriptions) and well knowing that Eccleſiaſticks

ſiaſticks do not biud themſelves, neither can be bound by any Covenants of their Predeceſſors, to renew for the Fines formerly paid, drags the Leſſors to a Court of Equity, and there he is ſure to caſt them; for, would it not be very hard and unjuſt, where a Family hath gone on for 3 or 4 Generations, and hath ſucceſsfully baffled their Landlord out of one Half of his juſt Due for many Renewals, that it ſhould be in the Power of a Man of Spirit to put a Stop to ſuch a fraudulent Practice? Beſides, is it not againſt all the Rules of Conſcience and Equity, that after a Tenant hath mortgaged, ſettled, or limited his Tenement to Family Uſes, the Leſſor ſhould refuſe to fill up his Leaſe, altho' he would give a full third Partof the Value of ſuch Renewal?

But ſome wiſer Heads than thoſe, who plainly ſee how vain it would be, to expect that their unrighteous Dealings ſhould ever meet with any Countenance in a Court of Equity, there being no Grounds to hope that ſo juſt a Tribunal will ever patronize Oppreſſion, in any Shape; and well knowing, that by the Laws, as they now ſtand, they have no Power to compel the Granter to take ſo little as they are willing to give; humbly propoſe that a Law may be made in their Favour, to oblige the Leſſors, being Churchmen, (no others!) to renew the lapſed Terms, for the *ſame Fines* that were paid for the laſt Renewals: And for that Purpoſe, an Act is prepared for aſcertaining the Sum to be paid thro' all future Ages;

and

and could they obtain ſuch a Law, it would be *ſtripping* thoſe Eccleſiaſticks, as the Author calls it, who are, generally ſpeaking, too poorly clad already, to be the Objects of any body's Envy.

Another Sort of Authors are for bringing about their Ends by a more myſterious way; and therefore make Uſe of their utmoſt Skill to perplex the Underſtanding of their Readers, and make Counters paſs upon them for Guineas: Thus are we amuſed with unintelligible Harangues, conſiſting of hard Words, that their falſe Reaſonings may paſs on us undiſcover'd; and when their artful Appearances are detected, they fly to bold and impudent Aſſertions, and what they connot ſupport by Argument, they attempt to eſtabliſh by Confidence. The many Tracts that have been publiſhed, of late Years, tending to depreciate the Value of Leaſehold Eſtates, as well thoſe held for Years certain, as thoſe on Lives, abound with Inſtances of this kind of juggling: The principal of which, I hope, I have already detected; but am not ſo vain as to expect that any one of the manifeſt Errors that I have pointed out, will be retracted.

Thus do thoſe Authors claſh in their Arguments, and ſcarce any two of them purſue their general Ends of reducing the Value of thoſe Renewals, on the ſame Pretenſions: And it is obſervable, that the World is amuſed with loud Outcries againſt the Avarice and Oppreſſion of the Eccleſiaſtical Leſſors; but ſcarce one

one of their Tenements is, on account of their exorbitant Demands, ſuffered to drop into their Hands; and it would be ſtrangely unaccountable in the Tenants, if they ſhould; for, notwithſtanding the Clamour they raiſe about the exorbitant Demands that are of late Years made upon them, it is very plain that they cannot lay out their Money ſo advantageouſly elſewhere; and even their Advocates in Print, as well as the Facts themſelves, are a convincing Proof, that they renew their Leaſes, for the moſt part, at leſs than half, rarely, if ever, at ſo much as two thirds of the Money taken by Lay-Lords, or of the real Value of ſuch Renewals.

Before I quit this Subject, let me advertiſe the Reader, that the Author's Aſſertion, *p.* 31, *viz.* "*That the Rent reſerved on Leaſes of this kind* "*is commonly one third of the yearly Value*;" ſeemed ſo different from the Truth of the Facts that had come within my Obſervation, that it put me on a further Inquiry; and having an Opportunity of reſorting to a large Rental of one of thoſe Societies, which are included in the Statute of the 18th of Q. *Eliz.* and thereby obliged to reſerve one third Part of their Rents to be payable in Corn and Malt; the Quantity of which was to be computed from the Prices of Corn at that time, *viz.* Wheat at 6*s.* 8*d.* and Malt at 5*s.* a Quarter; and the Leſſee to have his Option of paying it in kind, or redeeming it with Money, in future Time, at a Market Price; from this Rental I extracted one hundred Inſtances (in Order as

they there ſtand): And from the *Data* which they furniſh me with, I think, it will appear, that the *Ratio* between the Rent, and yearly Value, even of the Eſtates within the Limits of this Act, notwithſtanding thoſe Rents are thereby increaſed to $\frac{7}{3}$ of what they would have been, if that Act had not been made, is vaſtly different from the Aſſertion above-mentioned. Thus for Inſtance,

In the Rental, or Regiſter Book, which I took thoſe Extracts from, the Rents, and other Reſervations, together with the laſt Fines or Renewals, ſtand as follow:

1. The old Rent, or *That* $\frac{2}{3}$ of it which is ſtill paid in Money.
2. The Grain, *viz.* the Quantity of Buſhels and Price redeemed at.
3. Some new Reſervations, which the Society have from time to time made for the Augmentation of poor Vicarages, or the like, by accepting leſs Fines as an Equivalent to the Leſſee in reſpect thereof.
4. The Fines paid on the laſt (and ſome former) Renewals; which the Society generally ſtate at a Year's Value, exclusive of the Reſervations above-mentioned.

In my Computation from hence, I have taken it for granted, that the Sum of all theſe together is the full improved yearly Value

of the Tenement (whether this be not too great a Conceſſion, I leave to the Leſſee's private Judgment): And having added all theſe Totals together, for the whole Number of Inſtances above-mentioned, I make the Aggregate thereof, the Denominator of a Fraction: And the Sum of the Totals of the three Reſervations being made the Numerator thereof, that Fraction will expreſs the *Ratio* of the reſerved Rents to that of the yearly Value: And this will turn out to be as 2 to 9, or near it: But then, if it ſhould appear, that the yearly Value, thus eſtabliſhed, is not more than the *clear yearly Income, free of all manner of Reprizals*, as I believe is, in general, the very worſt of the Caſe; then the Conſequence is, that the whole Sum paid out amounts to about 4 *s.* 6 *d.* of the Pound.

But again, from theſe Extracts, the old Rents being ſumm'd by themſelves, and one half of that Sum added thereto; the Aggregate is the whole that was reſerved, before the making of that Act; And by comparing this in like manner as before, the *Ratio* will be that of 1 to 10, or very near it: And now, if it be conſidered, that none are affected by the before-mentioned Statute but the two Univerſities, and the Colleges of *Wincheſter* and *Eaton*, whoſe Corps of this kind bear but a ſmall Proportion to thoſe of all the Eccleſiaſtical Perſons and Societies in the whole

Kingdom; it will be very manifeſt, that *The Generality of the Tenants, of this kind, pay but about* $\frac{1}{10}$ *of the Yearly Value of their Tenements, by way of reſerved Rents.*

I have an Obſervation or two more to make in relation to this Subject; but as they are more properly Omiſſions in my *Gentleman's Steward, &c.* ſhall refer them to the Supplement thereto.

A SUP-

A SUPPLEMENT TO THE *Gentleman's Steward*, &c.

ALthough I have taken a pretty deal of Pains in the foregoing Tract, to defend my former, againſt the Objections which I think do not juſtly lie againſt it; I would have the Reader know that I am very conſcious of its Imperfections, and Deficiency; ſome few Things in it I ſee reaſon to retract, and a great many others that belong to the Subject are omitted: Of the firſt kind are, my Obſervations about Reverſions. I have, in valuing a Term of Years, or for a Life that is to be nominated, and commence at the Death of a Life or Lives *in eſſe*, run into an Error of the ſame kind with that of the Author of the *Eſſay*; I deſire therefore, that the two laſt Paragraphs in *p.* 81, may ſtand thus corrected.

If

If it be required to ſhew the Value of a Term of Years, or of a Term determinable on the Death of any Life or Lives, which Years are to commence, and which Lives are to be nominated, at the Death of any Life or Lives *in eſſe*; It will be neceſſary for this Purpoſe, a Table ſhould be made exhibiting the Amount of all the Probabilities that the Annuity will be paid 1, 2, 3, 4, 5, *&c.* Years, on the Contingency of Lives of the different Ages: Which Amount (no Intereſt diſcounted) will be the Number of Years that ſuch a Life may be deem'd equal to; and then the Term, *in poſſe*, muſt be conſidered as a reverſionary Term to commence at the End of the former.

But until ſuch a Table be prepared, it may be ſufficient for the Value of a Term, *&c.* to commence after a ſingle Life, if, from Dr. *Halley*'s Table, be taken out the Number of Years intercepted between the given Age of Life, and the Time when the Perſons then living are reduced to half that Number, and to conſider thoſe Years as the Length of the Term, *in eſſe*: And if that Term ſubſiſts on more than one Life, it may (perhaps) be found equal in Value to a ſingle Life of ſome Age or other; and then that Age may be made uſe of as before. I do not lay down this as a Rule of computing, but as a convenient way of gueſſing at thoſe Values; and

and which may be made uſe of, until Tables better eſtabliſhed by Obſervations than the *Breſlaw* ones, may encourage ſome Perſon or other to imploy his Time and Skill to ſet forth a Deduction from them, more to be depended on, than thoſe of mine are: And if it be conſider'd in this Caſe, that when the Term *in eſſe* is a long one, the Difference of 5 or 6 Years in its Continuance, hath but little Influence on the Value; and that, when it is a ſhort Term, the Difference ariſing from the Diſcount is but ſmall and inconſiderable; I ſay, if this be duly weigh'd, the Method here laid down will appear liable to no great Inconveniency.

Another Thing in that Chapter of mine, *Of Reverſions*, and which may be liable to ſome Exceptions, is this; that I have allowed the Purchaſer of an Annuity, for a Term in Reverſion, the ſame Rate of Intereſt for his Money, that I have the Annuitant in Poſſeſſion; although the former is plac'd out at compound Intereſt for a Number of Years, at the End of which it may be taken in with all its Increaſe at one Lump, by a Sale of the Annuity; whereas the other is to receive his Intereſt, with Part of the Principal, every Year, (when perhaps he hath no Call for it) and to have only Intereſt for the Remainder: And this Objection, I admit, is of Force; and by way

way of Correction, refer to what I have taken Notice of, on this Head, before, in my ſecond Note, *p.* 54; to which I would add, that when the thing purchaſed in Reverſion is an Eſtate conſiſting of Land, Houſes, *&c.* which the Tenant in Poſſeſſion hath a Power of reducing to leſs Value than it is of, at the time of takeing the Reverſion (and this is often the Caſe, let the Covenants of the Leaſe be ever ſo ſtrict and binding); this alters the Caſe, and is at leaſt a full Compenſation for the Benefit ariſing by the accumulated Intereſt beforementioned.

But when the Annuity purchaſed is a certain Income or Rent-Charge on an Eſtate, to commence after a Term of Years in being, it is doubtleſs reaſonable that the Purchaſer be contented with a leſs Rate of Intereſt than may be expected for the Money ſunk on the ſame Annuity for the Term in Poſſeſſion: And the Reaſon is very plain; for here is no Poſſibility of being kept out of the Intereſt, or of making no Advantage of it: The Man who thus lays out his Money is aſſured of the Income of it, and of a Profit on that Income, and again of the Increaſe Year after Year, for ſo many Years as the poſſeſſionary Intereſt in the ſame continues; he does, in effect, purchaſe an Eſtate for which he is ſure of a Tenant that cannot defraud him of his Rent (for ſo the Intereſt of the Money he lays out may be called); and hath this further Advantage, that no Time, Trouble, or Charge, attends the Recovery of it; neither

is

s it detained one Day after it becomes due, ut is immediately taken as Money likewiſe t Intereſt on the ſame Security.

The Rate of Intereſt for Money, thus laid ut, will likewiſe be limited in ſome Degree y the Length of the Term *in eſſe*; but every rudent Purchaſer muſt accommodate *that* greeably to the Circumſtances of his Family: hus, for Inſtance, every body would be willing in his private Capacity at leaſt) to keep the enefit within View; no Purchaſer could be ound, who would lay out Money on an Eſtate hat ſhould make no Return till perhaps the hird or fourth Generation; this would be to rovide for Strangers to himſelf and Family, r perhaps laying up a Fund for Lawyers.

It may be ſaid, that Purchaſes of this kind although the making them ſhould be allowed good Diſpoſition of Money, for the Benefit of oſterity) are not ſo eligible, as to go off for leſs ntereſt than others; becauſe by this means a Man diveſts himſelf of Money, which he may want the Uſe of again, in his own Life-time; r his Poſterity may call for it long before the nnuity comes into Hand.

And this Obſervation is very true, and is a Matter of Prudence. Every body ought to ook before him, and not lay out Money that hould buy him Bread next Week, in Food which he cannot have till next Year; becauſe hen it would be enough to ſupport him a whole Month: But when it is conſider'd that at any ime, during the time *in eſſe*, the reverſionary

Annuitant may, if his Occaſions require it, probably diſpoſe of his Intereſt to good Advantage, in Proportion to the time that is lapſed; I believe Purchaſes of this kind would not lay upon Hands at a leſs Rate of Intereſt than ſuch as muſt begin to be paid off in a very few Years time.

As to the Error in my Tables. *p.* 98, (which the Author of the Eſſay hath taken notice of) I have wrought over that particular Number, *viz.* for the Ages of 12, 12, 12 at 5 *per Cent.* and find that it ſhould have been 19, 13, inſtead of 19, 54. As this hath likewiſe an Influence on the ſucceeding Numbers in that Column, and thoſe under 7 *per Cent.* I deſire that the ſame be corrected as in the Table adjoining.

I am aware, that a great many ſmall Miſtakes of this kind are crept into the Tables; but hope that few of them amount to ſo much as an Unit in the firſt Place of Decimals, and that affects it to but $\frac{1}{10}$ of a Year's Value, which is not ſo conſiderable as to need any Apology; neither do I know of any other material Objection to what I have there advanced, nor any thing elſe that I at preſent ſee any Reaſon to retract.

Age	5 *per Cent.*	7 *per Cent.*
12	19.13	13.90
22	18.98	13.83
32	18.84	13.77
42	18.71	13.71
52	18.60	13.66
62	18.52	13.60
72	18.45	13.55
82	18.39	13.50

But as to Deficiencies and Omiſſions theſe are very numerous; for had it been my Intention to have taken in the whole Subject, a vaſt Number of Particulars ſhould have been added: Thus I have not at all conſidered the Value of Advowſons and Patronages; of Widowhoods, Reliefs, Herriots, Triennial or other periodical Payments; of Leaſes for Years and Lives, whereby the Leſſees have Power at any time during the ſame, to grant out Copies or other Leaſes, for longer ſubſiſting Terms, or for other different Lives; of great and ſmall Tythes; of Royalties, Seigniories, Fiſhings, Fowlings, Eſcheats, Deodands, Waſtes, Mines, Quarries, and other Rights of Manors: On theſe, and a great many other Points, Queries may be ſtarted, relating to this Subject; and, as my not handling theſe may be thought an Omiſſion, I ſhall take upon me here to ſupply that Defect in ſome of the moſt material Inſtances.

And *firſt*, as to *Advowſons* or *Rights of Patronage*, they may be conſider'd as Perpetuities, either to the whole or to alternate Vacancies: Or, as the next Avoidance only, ſometimes the two next, or the next but one, *&c.*

I begin with that of the Nomination to the next Avoidance of a Living; for, when that is rightly underſtood, there can be no great Difficulty in computing the Value of the Perpetuity, or that of any alternate Turns.

As this is a beneficial Intereſt, as ſaleable, and for which a Perſon is as like to get a Purchaſer, as for any other, I ſee no Reaſon why it may not be conſider'd as an Eſtate (of its yearly Value) for one Life; *to be named, and take, at the Death of a Life in Being (viz.)* the preſent Incumbent. If it be ſaid, that the Purchaſer, when he buys, hath *the Perſon* in View whoſe Life he intends it ſhould be held for; and therefore, as to him, it is no other, than an Eſtate for one Life, *immediately to be named*, in Reverſion of the preſent Incumbent, who very probably may outlive the Perſon he intends it for, I think this is an Argument of little or no Force; for, if the preſent Incumbent ſurvives the intended Clerk in Reverſion, and there is no other, for whom the Purchaſer would (at ſo great an Expence) provide; then the Right of preſenting will go to the ſame Market again; and doubtleſs, as the Term *in eſſe* is nearer an Expiration, ſuch an Advance will be given, over and above the firſt Purchaſe Money, as the Intereſt thereof, for the time lapſed, amounts to.

But tho' *the Tenure* be ſo much like thoſe of Eſtates for Life, the *yearly Value*, and *Outgoings* muſt be differently conſider'd; at leaſt, according to my Scheme of Calculation, it muſt: But, as to the Method of Valuation recommended by ſome others, who claim an Allowance for the *Leaſe-hold Purchaſer*, for *manuring and managing the Eſtate*; there the yearly Value ſo reduced, is much of the ſame kind

kind with this, after the Expence of ſerving the Cure is deducted.

To the Expence of a Curate, muſt be added, the Tenths paid out yearly; the Rates, Taxes, and Repairs: And this altogether is an Annuity to be paid out; and if the Profits conſiſt of Tythes, and a Glebe only, then the Value thereof being known, as alſo the firſt Fruits, and Charge of Inſtitution and Induction, I cannot think of any thing elſe neceſſary to aſcertain the Value of the Intereſt, accrueing to the next Nominee.

For, by the Rule herein before laid down, the Number of Years, which the preſent Incumbent may probably live, being found; the groſs Income of the Living (when in hand) muſt be valued for one Life of about 30 Years of Age, at a proper Rate of Intereſt; the Amount of which being diſcounted at 4 *per C.* for the Years before found, as equal to the Life *in eſſe*, produces the Value of that groſs Income in ready Money: Again, let the Value of the Annuity paid out to the Biſhop, Curate, Rates, Taxes, and Repairs, be in like manner computed, (but, *as to the Term expectant*, at a lower Rate of Intereſt than before) this Value muſt be ſubtracted out of the former; as muſt alſo the Value in ready Money of the firſt Fruits, Fees, *&c.* to be paid by the Clerk on Admiſſion. And then the Remainder is, I think, the fair Value of the Benefit that is to be purchaſed: Let me explain this by an

EX-

EXAMPLE.

A Rectory conſiſting of great and ſmall Tythes, of 160 *l.* a Year, and a Glebe of 40 *l.* a Year; out of which the Tenths, Rates, Taxes and Repairs, amount to 30 *l.* a Year; and the Payment to a Curate 40 *l.* a Year more; the firſt Fruits and Fees, on Admiſſion, amount to 70 *l.* On this the preſent Incumbent is 60 Years old: What is the Value of the next Preſentation thereto?

	Years.	*l.*
Firſt, 200 *l.* a Year for a Life of 32 at 6 *per Cent.*	11,47	2294
Deduct 70 *l.* a Year paid out at 4 ½ *per Cent.*	13,55	949
		1345
Deduct alſo the Sum to be paid on Admiſſion		70
The Remainder is the Value of the Living on a Life of that Age, when it comes into Hand.		1275

Secondly, By Dr. *Halley*'s Table 242 Perſons that are living of the Age of 60 are reduced to half that Number in 12 Years; and therefore I take it, that the Value of the next Preſentation to this Living expectant on the Death of an Incumbent aged 60, is as follows, *viz.*

1275 *l.* payable after 12 Years, which (Diſcount being allowed at the Rate of 4 *p. Cent.*) is worth in ready Money	790

If

If the Inquiry be of the Value of a Vicarage endowed, or of any other ſpiritual Promotion, the Profits whereof conſiſt of a Payment in Money out of Lands ſettled for that Uſe; or of the Profits of Lands, or the like; the yearly Value of thoſe Profits, and of the Payments out of them, muſt be fixed and eſtabliſhed with Judgment, and then the Computation is the ſame as before.

But oftentimes thoſe Livings conſiſt of a Corps on which the Incumbent hath a Power of Leaſing, during the whole time that he is poſſeſſed of the Benefice: And the Value of ſuch a Right as this admits of a great deal of Variety; for it will be different according to the different Powers, and different Tenures annexed to it: Thus, for Inſtance, the Incumbent may have Power to renew after a particular Lapſe, by the Death of *One*, or not till the Death of *Two* Lives; the Grants to be made may be for Years, and he may have no Power of filling up leſs than 7 Years Lapſe: Again, he may, or may not have Power to accept of Surrenders, and to regrant: The Lives he fills up may have Widowhoods annexed, or they may not: Theſe, and a great many other Rights and Cuſtoms, go with ſome of thoſe Corps, and others are exempt from them. It would be endleſs to enter into particular Inſtances of this Nature: I hope from what I have heretofore obſerved, with what I ſhall further take notice of on this Subject, the judicious Reader will find out a general Rule, to which he

he may be able to reduce any of those particular Cases, and discover the Value of the thing inquired after.

Again, if it be inquired what the 2d Presentation to the former Rectory is worth: Reason tells us, that this can be no other than 1275 *l.* payable at the End of 40 Years to come; which Number of Years arises by adding 28 (the Years that, by Dr. *Halley*'s Table, a Life of 30 hath an equal Chance of Living) to 12, the Years expectant on the Life of the present Incumbent: And this View is at too great a Distance for the Purchaser to advance his Money at less than 4 *per Cent.* Therefore,

	l.
1275 *l.* payable at the End of 40 Years is worth	268
By the like Process the third Avoidance will not, at 4 ½ *per Cent.* be worth more than	64
Now that of the next Turn at 5 *p. Cent.* worth	10
And supposing all this, and considering this last Value is the Purchase of an Expectancy after 96 Years; I believe it will be admitted, that all these Values being added together, that Sum will be but a very little short of the Value of the Perpetuity, *viz.*	1132

I chose this Method of Computation, because the Answer shews at once the Value of the second, third, and fourth Turns, and by that

that means ſolves all the Queries that can be raiſed about it: And nothing can be neceſſary to be added, but this; that in regard to the Nature of the Tenure, and Qualifications of the Perſon who can enjoy it, and ſome other Circumſtances with which it is attended, the Purchaſer may, perhaps, expect 1 *per Cent.* more for his Money than he who purchaſes another Eſtate.

But in this reſpect every body will govern himſelf by the Circumſtances of his Family, and the Opportunities he may meet with; and I think it cannot be denied, but the Accidents of that kind do, in ſome meaſure, alter the real Value of thoſe Benefices, which are purchaſed to ſuit with them.

Let me next examine into the Value of ſuch Payments as are to be made at the End of a certain Period of Years for ever: Thus for Inſtance, ſuppoſe a Man holds an Eſtate in Fee, on Condition that at the End of every 7 Years he pay out to the High and Chief Lord 20 *l.* and ſuppoſe he would purchaſe off this Payment at the Rate of 3 *per Cent.* for his Purchaſe Money: And alſo, let it be admitted that 3 Years of the firſt 7 are already lapſed, what is the Value of the Purchaſe?

Firſt, out of Tables I. and II. of my *Gent. Steward*, *&c.* take the ſeveral Values under 3 *per Cent.* (thoſe Tables being ſupply'd with a Column for that Rate of Intereſt) *viz.* .8,1 in the ſecond, and 6. 23 in the firſt Table; the former of theſe being divided by the latter

ſhews, that 1 *l.* payable at the End of 7 Years is equal to an Annuity of 0, 13; ſuch an Annuity in Fee at the Rate of 3 *per Cent.* is worth 33 $\frac{1}{3}$ Year's Value; and the whole to be ſold, ſuppoſing the firſt Payment were to be at the End of 7 Years, would be 4 *l.* $\frac{1}{3}$; but, as the firſt Payment is to be at the End of four Years, the Value will conſiſt of two Parts, *viz.* firſt of 1 *l.* payable at the End of 4 Years, and then of 4 *l.* $\frac{1}{3}$, payable at the ſame Time; ſo that the whole Value of ſuch a Payment will be 5 *l.* $\frac{1}{3}$, payable at the End of four Years, which at the Rate of 4 *per Cent.* is worth, in ready Money, by Table II. 4*l.* 10*s.* 6*d.*

The Reader will eaſily perceive, in what Manner this is applicable to all manner of Payments or Receipts, which are due at fixed and certain Periods; and, as to Reliefs and Heriots, payable on the Death of Lives, the Method before laid down with comparing them with a Term of Years certain, will, if duly attended to, furniſh him with a Rule to diſcover the Values, as correctly as is neceſſary, on thoſe uncertain Periods likewiſe.

Nothing is more common in Copyhold Tenures, than that one of the Cuſtoms of the Manor of which they are held, annexes a Right to the Widow of a Tenant (who dyes ſeized) to hold the Tenement, *dum ſola et caſta vixerit*; in ſome Manors the Lord grants Leaſes for two, in others for three, and in ſome I have known five male Lives granted, with Right, as beforementioned; ſometimes

to

to the Widow of each Life who dies poſſeſſed of the Tenement; but in other Manors, only to the Widow of the laſt Life named, or of the ſurviving Life.

I ſuppoſe it will be granted, that all Perſons will execute the Power they have, to the utmoſt Extent thereof, for their own Benefit: And then it will naturally follow, that every Life, on a Tenement whoſe Widow is entitled, will be ſure to leave a Widow to enjoy his Tenement: And one Poſition more may be laid down, as a Matter of general Obſervation, that the Woman who hath an Eſtate for her Widowhood, finds Means to hold it to the Day of her Death, or at leaſt until ſhe can renew, or ſurrender it for a valuable Conſideration.

This being premiſed, a great many Queries will ariſe, with relation to the Value of Eſtates on thoſe Tenures, as they may be differently circumſtanced.

When a Man that is married to a Woman near about his own Age, holds an Eſtate of this kind for his Life, here the Holding is abſolutely for his Life in Poſſeſſion; but then, the reverſionary Right depends on the Survivorſhip of the preſent, or of ſome after-taken Wife; ſuch a Survivorſhip there will be by the above Poſition; but how to come to the Knowledge of the Value of that Eſtate, is the Difficulty.

Let it then be conſidered as a Tenure conſiſting of two diſtinct Parts, and to be held by A and B, as follows.

First, A holds an Annuity (of 100 *l.* a Year, for Inſtance) for the Term of his natural Life, and is 32 Years old, and married to E, of the ſame Age.

Secondly, B is to hold the ſame Annuity, from the Death of A, during the Life of E, if ſhe ſurvive; or elſe, during the Life of ſome other after-taken Wife of A, which ſhall ſurvive him.

The Intereſt to be diſcounted being ſuppoſed after the Rate of 4 *per Cent.* let it be required to find the Value of the Right of A and B reſpectively.

	l.
Two Lives, each 32 Years old at 4 *per Cent.* are worth	18.66
One Life of that Age is worth	14.30
	4.36

And hence,

The Right of A in the Annuity can be no other than	14.30
And the Right of B, if E ſurvives, will be	4.36

But, as A hath an equal Chance of outliving E, and of leaving a Perſon to ſucceed, which inſtead of 57 Years of Age (the probable Caſe, as it is here put) may not be more than 22 Years

Years old; let the Value of ſuch a young Life in Succeſſion of A be found.

Thus, by my Tables at 4 *per Cent.*

As	9.13	The Value of a Life of 57
:	16.05	The Value of one of 22
::	4.36	The Right, if E ſurvive
:	7.00	The Right, if A ſurvive

And now, as the Probability of Survivorſhip is of equal Value, the Medium betwixt thoſe two Values, *viz.* 5. 68. may be taken for the real Value of the Right that B hath in the Annuity, Intereſt being diſcounted at the Rate of 4 *per Cent.*

	l.
And ſo the Value of the whole Tenure is	1998
Of which the Right of A is worth	1430
And that of B worth	568

'Tis very plain, that by this way of arguing, and diſcounting at 4 *per Cent.* an Annuity or Eſtate, held by the Life of a Man of 32 Years old, with a Widowhood annexed to it, is better than if held for the Term of two ſuch Lives, and the Survivor, by about $1\frac{1}{3}$ Year's Value. But if a Rate of Intereſt of 5 *per Cent.* be allowed the Purchaſer for the Money he lays out on this Tenure, then the Value of the Male-life and Widowhood will exceed that of two Lives by 1.05 only; and this Exceſs will continually decreaſe as the Rate of Diſcount increaſes.

increaſes. If it be ſaid that I have here ſtated it in the ſtrongeſt Terms againſt the Tenant; let it be conſidered, that a Man may have it in his Power to name his Succeſſor at the Age of 80 or 90 Years; that he hath the Choice of all his Female-friends and Relations, and may pick out one of a healthy Conſtitution, and of the beſt Age: And when this happens to be the Caſe, the Eſtate may probably ſtand out on ſuch Leaſe or Copy, for a Term of 100 Years.

I muſt leave the Reader to apply this to the different Tenures of this kind beforementioned, in which I think he cannot meet with any very great Difficulty, when he conſiders the above Inſtance with due Attention.

The next Thing that is to be conſidered, is in relation to Manors held by Leaſes for 21 Years, or Lives, of Eccleſiaſtical Lords; whereby the Farmer or Leſſee hath a Power of granting out Leaſes or Copies, either for a Term of Years, or for two or three, or ſometimes for five or ſix Lives, and perhaps with Widowhoods annexed, at any time during the Continuance of his Leaſehold Term.

And here, if the *Poſtulata* laid down *p.* 107 be admitted, the whole Value of ſuch a Manor is made up of three diſtinct Parts or Intereſts: For,

Firſt, the Eccleſiaſtical Perſon or Society is poſſeſſed of, or entitled to, *a Rent reſerved*, payable during the Continuance of the Term granted to the Farmer; and then, after the Expiration of that Term, as well to the Rent reſerved

reſerved by the Farmer on the Leaſes or Copies by him granted, (which, generally ſpeaking, amount to enough to pay off the before-mentioned reſerved Rent, and the Expence of collecting and paying it in) as alſo to the whole Eſtate, in Reverſion of thoſe Leaſehold or Copyhold Terms.

Secondly, The Farmer is intitled to the Profits, ariſing either by any Eſtates in Demeſne, on which he may not have any ſuch Power of Leaſing, or by Fines for renewing any Lapſe that may happen, where he hath ſuch Power of Leaſing, at any time during his Term; as alſo, ſubject to the Payments out to the chief Lord as beforementioned, to the Rents reſerved on the Leaſes and Copies granted to the Under-tenants.

Thirdly, the Leſſees and Copy-holders under the Farmer, have a Right (ſubject to the reſerved Rents, Rates, Aſſeſſments and Repairs) to the Profits of their ſeveral Tenements, during the Term ſo granted to them.

The ſeveral Intereſts being thus explained, I ſhall next inquire into the Value of each of them reſpectively, in a Manor where the Nature, and particular Circumſtances, together with the yearly Values, are as in the following

EXAMPLE.

AB holds of the Dean and Chapter of—— the Glebe and Manor of —— conſiſting of a Demeſne, whoſe yearly Value is 70 *l.* but ſubject

ject to Rates, Taxes and Repairs, which one Year with another amount to 10 *l.* and of twenty other Tenements, whoſe yearly Values, taken together, amount to 840 *l.* but ſubject to a like Proportion of Out-goings with thoſe on the Glebe beforementioned; the Rent reſerved to the Lord is 25 *l.* a Year: On theſe twenty Tenements, there are Leaſes and Copies ſubſiſting for two Male-Lives, with a Widowhood annexed to that of the Survivor, which is the utmoſt Eſtate that the Farmer hath a Power of granting out; but then he hath a Power of renewing any Lapſe that may happen during the Continuance of his Term, which is 14 Years yet to come of a Term of 21; the Rents reſerved by thoſe Leaſes and Copies are ſufficient to pay the Lord's Rent: Let the Inquiry be, What is the Value of the whole Eſtate? And, how is that Value made up by the ſeveral Intereſts now ſubſiſting thereon? As alſo, What is the Renewal of the ſeven Years lapſed in the Leaſe to the Farmer worth?

First, then,

The whole Eſtate is 910 *l.* a Year, which at $4\frac{1}{2}$ *per Cent.* is worth $22\frac{2}{9}$ Years Value	20222
Out of which deduct the Out-goings, 130 *l.* a Year at $3\frac{1}{2}$ *per Cent.* worth $28\frac{4}{7}$ Years Value	3714
The Remainder is the whole Value ſought, *viz.*	16508

The

The next Enquiry is, how this Sum is made up by the ſeveral Values of the Leſſees and Copyholders Intereſt; that of the Farmer, and that of the Lords.

To begin with that of the Leſſees or Copyholders.

	l.
840 *l.* a Year for three Lives and the Survivor, (ſuppoſe each of 32 Years of Age) at 6 *per Cent.* 15,01 Years.	12608
Deduct 145 *l.* a Year, at 4 *per Cent.* 20,63 Years Value	2991
The Remainder would be the Value of the Leſſees and Copyholders, if their Tenure had been for the three Lives and Survivor abſolutely.	9617
To which add one Year's Value on account of the Widowhood, which is near about the Exceſs of the Value on account of that Contingency.	720
This makes up the Value of the whole Intereſt, which the Leaſehold and Copyhold Tenants are entitled to.	10337

The next thing to be conſidered, is the Intereſt that the Farmer hath in the ſame; and,

	l.
First, He is intitled to an Eſtate of 70 *l.* a Year, for a Term of 14 Years, which at 5 *per Cent.* is worth 9.90 Years Value, or	693
Out of this deduct 10 *l.* a Year paid out to the Rates, Taxes, and Repairs, at 4 *per Cent.* 10.55 Years Value.	105
The Remainder is the Value of the Demeſnes.	588

Secondly, He is intitled to the Fines that may accrue, by renewing any Life or Lives, in the Space of 14 Years; and as by the *Poſtulatum* the Farmer is ſuppoſed at the End of his Term to leave the Leaſehold Intereſt ſubſiſting, as extenſive as he can: I think this Power of filling up the Leaſes is equal in Value to that of 14 Years, lapſed out of a Term of three Lives.

The Tables which I mentioned before, ariſeing from the Sums of the Probability of Life, without regarding any Diſcount at all, would be uſeful for ſolving this Difficulty: But in the mean time, before a Table is made for that Purpoſe, I think no great Error will accrue, by proceeding with my Tables in the *Gentleman's Steward*, &c. in the following manner; or with Dr. *Halley's* Table, from the Bills of Mortality, as I have likewiſe applied the ſame.

By

By my Tables, in the first place,

	Years.
A Lease for the three Lives given, is by Tab. 9. worth 15.01 Years Value, and that by Tab. 1. answers to a Term of 40 Years.	15,01
A Lease for 26 Years, by the same Table, is worth	13,00
Hence the Value of 14 Years Lapse is	2,01

And that this is nearly the Value of such Lapse, will be in some measure confirmed by Dr. *Halley*'s Table. Thus of 515 Persons of the Age of 32, there are 128 dead in 14 Years; therefore, as 515 : (3×128) 384

: : 2.62 { The Value of a Life of 12 in Reversion of two of 46.

: : 1.96 The Value of the Renewal.

Hence I think it may, without any great Error, be concluded, that two Years Value, payable after 14 Years, is the Worth of this Right of renewing; wherefore,

1390 *l.* payable after 14 Years at 5 *per Cent.* which may be called the Value sought, is	709
And this, added to the Value of the Demesnes before found, gives the whole Value of the Right and Interest of the Farmer.	1297

And now I come in the laſt Place to conſider the Value of the Lord's Right in the Eſtate.

	Years.
Firſt, 25 *l.* a Year Rent during the Continuance of the Leaſehold and Copyhold Intereſt, this (the Widowhood conſider'd) is worth 23 Years Value.	575
Secondly, 70 *l.* a Year at $4\frac{1}{2}$ *per cent.* out of which deduct 10 *l.* a Year, at $3\frac{1}{2}$ *per Cent.* Remainder is the Value in Fee.	1273
Deduct out of this the 14 Years *in eſſe*, worth	588
The Remainder is the Value of the Demeſnes, in Reverſion of the Farmer's Right therein.	685

Thirdly, The Right of the Leaſeholders and Copyholders, *viz.* 10337 *l.* being taken out of the whole Value of the Eſtate, *viz.* 16508 *l.* will leave 6171 *l.* which will be the Value of the reverſionary Intereſt at the End of 14 Years, when the Farmer's Right determines.

	l.
Hence the preſent Value of ſuch reverſionary Right, Intereſt diſcounted, at 4 *per Cent.* is	3579
This Sum added to the two former gives the whole Value of the Intereſt that the Dean and Chapter have in the Eſtate, *viz.*	4839

And

	l.
And now, if the three distinct Values thus found be added together, their Sum will not differ much from that before found, as may be seen by comparing the former with this, which is	16473

There remains, then, to enquire into the Value of renewing the 7 Years, lapsed out of the 21.

And first for that of the Glebe,

70 *l.* a Year for 21 Years at 6 *per Cent.* deducting 10 *l.* a Year for the same time, at 4 *per Cent.* is worth	683
And 70 *l.* a Year for 14 Years, at 6 *per Cent.* deducting 10 *l.* a Year for the same time, at 4 *per Cent.* is worth	545
This latter Sum subtracted from the former, leaves the Value of the Renewal of the Glebe, *viz.*	138

Again, as to the Manor,

By the like Process with that before in Page 115, the renewing all the Lapses that will probably happen in 7 Years, will appear to be worth .7107 Years Value; and hence the Sum that will arise by such Renewals, is 695x.7017	494

But

	l.
But this is ſuppoſed to be done at the Time that the Leaſe of 21 Years expires; therefore 494 *l.* payable after 21 Years, at 4 *per cent.* Diſcount, is the Value of renewing the Lapſe, to be paid to the Dean and Chapter, *viz.*	217
This with the former Sum makes the whole Renewal worth	355

Thus have I at large explained this Example, in every Branch thereof; and if it be not with ſo much Accuracy, as a more certain *Data* would have enabled me to have done, yet I think *the Method* will appear a rational one, and furniſh ſuch as are willing to purſue the Matter further, with ſome uſeful Hints for that Purpoſe.

'Tis true, that a great many other Queries may be ſtarted, with relation to the Tenures of thoſe Kinds; for the Cuſtoms of Manors are almoſt innumerable, and in ſome reſpect or other every one of them varies from all the reſt: But I believe, that when all ſuch of them as are capable of being applied to ſome or other of the Rules here laid down, are left out of the Number of the unſolved ones; the Remainder will appear very trifling, and rather Matters of Speculation and Curioſity, than general Uſe.

Great and ſmall Tythes is an Eſtate, in ſome reſpects, different from any that I have before conſidered; and ſome People contend that they are

are worſe, and of leſs Value, than an Eſtate of Lands of the ſame yearly Amount, whilſt others are of a contrary Opinion, and think them rather better; and that they ought to ſell for more Money, in Proportion to their yearly Value, than the Lands out of which they are produced.

Let this Matter be examined by the Rules I have before laid down, *p.* 76 *&c.* And when the Properties, that may juſtly induce a Purchaſer to lay out his Money in theſe rather than Lands, are compared with thoſe which render the latter more eligible; I believe it will appear, that the Rate of Intereſt, which may be expected for the Money, ſunk in the Purchaſe of Lands of the *beſt* Kind, will, for the moſt part, be a proper Diſcount for that which is laid out in Tythes, produced out of the ſame, or the like Eſtates; for

It ſhould be conſider'd, that Tythes are due in Kind, that is, they conſiſt of one Part in ten of the Fruits, which the Occupier of an Eſtate is obliged to ſet forth, and the Parſon hath no more Trouble than to fetch them home, when he hath Notice of their being ready for him: Or, in caſe the ſame ſhould be withheld by the Tenant, the full Value thereof is very eaſily recovered: Again, no Expence of Repairs of any kind goes out of it; nor is it liable to any Accidents, ariſing by Decay of Buildings, or the like; the Owner is entitled to one tenth Part of the Improvement made on any Tenement, without bearing any Share of the Expence; add

to

to this, that as to great Tythes, the *Quantum* is very eaſily adjuſted; and 'tis hardly poſſible, that any laſting Diſpute ſhould ariſe about them; and again, the Title to them is very rarely litigated.

When the Matter is view'd in this Light, a Purchaſer would be inclined to lay out his Money at a Diſcount of perhaps one *per Cent.* leſs than he would on the Lands themſelves: But, withal, it ſhould on the other hand be conſider'd, that the Parſon, or Impropriator, hath no Power to diſtrain for Tythes, as a Landlord may for Rent; and that the Arrears of one Occupier cannot be levied on a ſucceeding one, to whom he may aſſign the Eſtate, as in the Caſe of Rents they may. 'Tis true, as beforeſaid, the Improvements of an Eſtate add to the Value of the Tythes; but then, on the contrary, bad Huſbandry ſinks the Value of the tenth Part, in Proportion to that of the whole. And the Proprietor of the Tythes hath it not in his Power to *direct* the one, nor *prevent* the other; again, if the great Tythes are leſs liable to Diſputes, 'tis as evident that the ſmall ones admit of endleſs Cavils and Litigations: And 'tis in vain to expect, that ſuch People as make it no Matter of *Conſcience* to defraud, will be with-held from it by any other Bands, which they have the *Power* to break, or the *Craft* to untie.

How numerous are Diſputes about this Branch of Property! and how fatal in their Conſequences! Thus very often a Vicar ſtre-

nuouſly

nuouſly demands a Right that doth not juſtly belong to him; or, perhaps, claims it in a manner that Cuſtom, and immemorial Preſcription, will not by any means juſtify; notwithſtanding which, blown up with his Superiority of Knowledge, and ſpurr'd on by avaritious Deſires, nothing leſs than a Compliance with his unjuſt Demands will preſerve Peace: And if this be not ſubmitted to, a Fire is kindled, not to be extinguiſhed until it hath conſumed all the Kindneſs and Benevolence, all the Awe and Eſteem, all the relative Duty and Affection they owe to each other; and perhaps, ten times ſo much Money as the Thing contended for is worth.

And again, how common is it for Pariſhioners, when, by the Remiſſneſs of a former Incumbent, or, by his blameable Compliance with Terms prejudicial to the Intereſt of himſelf and Succeſſors, as well as by the Aid of their ſuperior Subſtance, (which they very often unite for that Purpoſe) they think themſelves capable of obtaining their Ends, to ſeize into their Hands, and unload their Eſtates of a good Part of what they take to be an unneceſſary Incumbrance! In which Caſe the poor Vicar hath his Choice, either of entering into a vexatious Law-ſuit with Antagoniſts, that think it no Crime nor Diſhonour to lay hold of all the Advantages that their ſuperior Fortunes, the peaceable Diſpoſition, Indolence, or Unwarineſs, of former Vicars; the Careleſſneſs of preſerving Terriers and Records; and even the

baſe Compliance of ſuch as intruded themſelves in the Times of Civil War and Confuſion, furniſh them with; or, of tamely giving up a Property which he is well aſſured belongs to the Vicarage, to the Prejudice of himſelf and Succeſſors, throughout all ſucceeding Ages.

But to return to the Subject I have digreſs'd from; what I have taken Notice of, in relation to the Properties of an Eſtate conſiſting of Tythes, will, I believe, ſuggeſt to the Reader, that ſometimes *a greater*, and ſometimes *a leſs*, Rate of Diſcount, ought to be allowed the Purchaſer for the Money he lays out; which may be moderated by a due Application of the Rules and Obſervations I have before laid down.

In my *Gentleman's Steward Inſtructed*, I have ſufficiently explained the Rule there laid down, for computing the Value of renewing ſeven Years, lapſed in a Leaſe for 21; but ſince the Proceſs may be ſhortened and rendered much eaſier by a ſmall Table for that Purpoſe, I ſhall here ſupply that Deficiency, by inſerting one, that will exhibit, at one View, a Factor; whereby, the yearly Rent, for which an Eſtate is or ſhould be lett, (the Landlord paying reſerved Rent, Rates, Taxes, and Repairs) being multiplied, the Product will be the Value of the Renewal in Money: But then this is to be underſtood, of ſuch Tenements as conſiſt of a Farm-houſe in good Repair, with ſuitable Conveniencies for the Accommodation of the Tenant that is like to enjoy it; and where the

Out-goings

Out-goings are not more than 14, nor leſs than 3 Shillings in the Pound, of the yearly Rent it is lett for.

Out-goings in each Pound of the yearly Value.	Factor.	Out-goings.	Factor.	Out-goings.	Factor.
Shillings.		Shillings.		Shillings.	
3	2,00	7	1.48	11	0.96
4	1,87	8	1.35	12	0.83
5	1,74	9	1.22	13	0.70
6	1,61	10	1.09	14	0.57

The Reader muſt be informed, that this Table allows the Purchaſer 6 *per Cent.* for his Money; and diſcounts the Out-goings at 4 *per Cent.* when they amount to no more than 3 *s.* in the Pound: But when they run ſo high as 14 *s.* in the Pound, then at 5 $\frac{1}{2}$ *per Cent.*

This Table is ſo plain and eaſy, that nothing can be neceſſary but an Example or two, by way of Illuſtration; and to compare the Conſequences of this, with thoſe of another practis'd Method of computing.

EXAMPLE I.

A Tenement, worth and lett for 95 *l.* a Year, out of which there iſſues to the Lord 7 *l.*

a Year, and to other Incumbrances, in all 12 *l.* a Year; What is the Value of renewing 7 Years, lapſed out of a Term of 21 Years?

Out-goings, 19 *l.* that is, 380 Shillings.

Yearly Rent 95) 380 (4 *s.* { which is the Sum paid out for each Pound of the Rent.

The Table right againſt 4 *s.* exhibits the Factor 1,87. And 95 *l.* multiplied by 1.87 produces 177,65 *l.* the Value ſought.

☞ One Year's Value (excluſive of 7 *l.* Rent) is } 88,00

Hence, if the Lapſe be renewed on thoſe Terms, the Leſſor gains thereby, more than he pays for the Renewal. } 89,65

EXAMPLE II.

What is it worth to renew the like Lapſe on a Tenement, whoſe Rack-rent is 80 *l.* reſerved Rent 20 *l.* and the other Out-goings 16 *l.* more?

Whole Out-goings 36 *l.* or 720 Shillings.

Rent 80) 720 (9 *s.* in the Pound paid out

Againſt

Againſt 9 *s.* Tabular Number, 1.22; which multipled by the Rack-rent, 80 *l.* produces the Value ſought, 97,6 *l.*

☞ If this were to be renewed at one Year's Value, excluſive of the reſerved Rent, } *Viz.* 60,0

Then the Advantage to the Tenant is more than $\frac{3}{7}$ of the Money he pays for the Renewal, } 37,6

As the Number of Years Value, which an Eſtate is worth to be ſold, *will* or *ſhould* always keep Pace (in a contrary Order) with the Intereſt of Money; ſo will the yearly Value thereof in Money, (in an uniform Order) with the Price of the Neceſſaries of Life; and hence, to pretend that ſuch Value in Years ſhall continue through a long Series of Years, *a fixed Number*; during which, the Intereſt of Money is continually *fluctuating*; or, that the yearly Value of the Eſtate is the ſame that it formerly was, altho' the Price of the Neceſſaries of Life produced out thereof, is in that Period increaſed perhaps four-fold; is ſuch an abſurd and prepoſterous Way of arguing, as cannot obtain the Concurrence of *any Perſon* who is endued with the right Uſe of his Reaſon.

But to carry this View a little further; a great many very antient Donations are ſtill ſubſiſting, which are limited to pecuniary Annuities, and payable out of Lands, which are now

now of a much greater, perhaps ſix times the Value: The Donors had, doubtleſs, in View, by theſe Bequeſts to provide for the Neceſſities of ſo many indigent Creatures, as ſuch a Proportion of the Eſtates ſubjected would extend to; but by the ill-judged and inconſiderate Method of appropriating ſuch a certain Sum of Money, inſtead of a fixed Proportion of the Fruits and Produce of the Lands, (which, and which only, will always bear an adequate *Ratio* to the Neceſſities of Nature) their Intentions are quite fruſtrated; and what they intended 200 Years ago, as a perpetual and ample Proviſion for 10 poor People, will now hardly ſupply the Neceſſities of three. *

I cannot, at preſent, think of any material Deficiencies, or Omiſſions, in my *Gentleman's Steward Inſtructed*, but what I have here ſupplied, except it be that Dr. *Halley*'s Table, which is the Baſis of my Calculations, and two or three other Tables, without which the Book is not ſo complete of it ſelf, may be thought proper to be inſerted. I confeſs myſelf an Enemy to Tranſcripts of all Kinds; but that this Tract, bound up with my former, may contain all that is neceſſary for Practice, have ſubmitted to fill up three or four Pages with thoſe common Tables.

---

* A Penny Loaf, formerly Bread for a Week, is now ſcarce ſufficient for a Day.

Dr.

Dr. Halley's *Table* Phil. Tranſ. *No.* 196, *for Eſtimating the Probability of Human Life, from the Monthly Births and Burials in* Breſlaw, *the Capital of* Sileſia.

Age	Perſons Living	Age	Perſons Living	Age	Perſons Living	Age	Perſons Living
1	1000	26	560	51	335	76	78
2	855	27	553	52	324	77	68
3	798	28	546	53	313	78	58
4	760	29	539	54	302	79	49
5	732	30	531	55	292	80	41
6	710	31	523	56	282	81	34
7	692	32	515	57	272	82	28
8	680	33	507	58	262	83	23
9	670	34	499	59	252	84	20
10	661	35	490	60	242	85	18
11	653	36	481	61	232	86	16
12	646	37	472	62	222	87	14
12	640	38	463	63	212	88	12
14	634	39	454	64	202	89	10
15	628	40	445	65	192	90	8
16	622	41	436	66	182	91	7
17	616	42	427	67	172	92	6
18	610	43	417	68	162	93	5
19	604	44	407	69	152	94	4
20	598	45	397	70	142	95	3
21	592	46	387	71	131	96	2
22	586	47	377	72	120	97	1
23	579	48	367	73	109	98	$\frac{2}{3}$
24	573	49	357	74	98	99	$\frac{1}{2}$
25	567	50	347	75	88	100	$\frac{1}{4}$

The Annuity which 1 *l. will purchase for any given Number of Years to come, not exceeding* 100.

Years	3	4	5	6	7	8
1	1.030	1.040	1.050	1.060	1.070	1.080
2	.523	.530	.538	.545	.553	.561
3	.353	.360	.367	.374	.381	.388
4	.269	.275	.282	.288	.295	.302
5	.218	.225	.231	.237	.243	.250
6	.184	.190	.197	.203	.209	.216
7	.161	.167	.173	.179	.185	.192
8	.142	.149	.155	.161	.167	.174
9	.128	.134	.140	.147	.153	.160
10	.117	.123	.129	.135	.142	.149
11	.108	.114	.120	.126	.133	.140
12	.100	.107	.113	.119	.126	.133
13	.094	.100	.106	.113	.120	.126
14	.089	.095	.101	.108	.114	.121
15	.084	.090	.096	.103	.110	.117
16	.080	.086	.092	.099	.106	.113
17	.076	.082	.089	.095	.102	.109
18	.073	.079	.086	.092	.099	.107
19	.070	.076	.083	.090	.097	.104
20	.067	.074	.080	.087	.094	.102
21	.065	.071	.078	.085	.092	.100
22	.063	.069	.076	.083	.090	.098
23	.061	.067	.074	.081	.089	.096
24	.059	.065	.072	.079	.087	.095
25	.057	.064	.071	.078	.085	.094

Years	3	4	5	6	7	8
30	.051	.058	.065	.073	.080	.089
35	.046	.054	.061	.069	.077	.086
40	.043	.050	.058	.066	.075	.083
45	.041	.048	.056	.064	.073	.082
50	.039	.047	.055	.063	.072	.081
60	.036	.044	.053	.062	.071	.080
70	.034	.043	.052	.061	.070	.080
80	.033	.041	.051	.060	.070	.080
90	.032	.041	.050	.060	.070	.080
100	.031	.040	.050	.060	.070	.080

A Table for reducing any periodical Payment to an Annuity of equal Value.

Years in each Period.	3 per Cent.	4	5	6
1	1.000	1.000	1.000	1.000
2	0.492	.489	.487	.486
3	0.321	.318	.316	.315
4	.239	.235	.231	.228
5	.188	.184	.180	.178
6	.155	.149	.146	.144
7	.130	.125	.122	.120
8	.112	.107	.103	.101
9	.098	.093	.090	.087
10	.086	.082	.079	.076
11	.077	.073	.070	.067
12	.070	.066	.063	.059
13	.064	.060	.056	.053
14	.058	.054	.051	.047
15	.053	.049	.046	.043
16	.049	.045	.042	.038
17	.045	.041	.037	.035
18	.042	.038	.036	.032
19	.039	.035	.033	.029
20	.037	.033	.030	.027
21	.035	.031	.028	.025
2	.033	.029	.026	.024
3	.031	.028	.024	.022
4	.028	.025	.022	.020
5	.027	.023	.020	.018

Years in each Period.	3 per Cent.	4	5	6
6	.026	.022	.019	.016
7	.024	.021	.018	.015
8	.023	.020	.017	.014
9	.021	.019	.016	.013
30	.020	.018	.015	.012
1	.019	.017	.014	.011
2	.018	.016	.013	.010
3	.018	.016	.013	.010
4	.017	.015	.012	.009
5	.016	.014	.011	.008
6	.016	.014	.011	.008
7	.015	.013	.010	.007
8	.014	.012	.009	.007
9	.014	.012	.009	.006
10	.013	.011	.008	.006

A Table of the Amount of 1 l. *in any Number of Years, not exceeding* 100, *at* 3, 4, 5, 6, 8, per Cent. *compound Intereſt.*

Number of Years.	3 per Cent.	4	5	6	8
1	1.03	1.04	1.05	1.06	1.08
2	1.06	1.08	1.10	1.12	1.17
3	1.09	1.12	1.16	1.19	1.26
4	1.13	1.17	1.22	1.26	1.36
5	1.16	1.22	1.28	1.34	1.47
6	1.19	1.27	1.34	1.42	1.59
7	1.23	1.32	1.41	1.50	1.71
8	1.27	1.37	1.48	1.59	1.85
9	1.30	1.42	1.55	1.69	2.00
10	1.34	1.48	1.63	1.79	2.16
11	1.38	1.54	1.71	1.90	2.33
12	1.42	1.60	1.80	2.01	2.52
13	1.46	1.66	1.88	2.13	2.72
14	1.51	1.73	1.98	2.26	2.93
15	1.56	1.80	2.08	2.40	3.17
16	1.60	1.87	2.18	2.54	3.43
17	1.65	1.95	2.29	2.69	3.70
18	1.70	2.03	2.41	2.85	4.00
19	1.75	2.11	2.53	3.02	4.32
20	1.81	2.19	2.65	3.21	4.66
21	1.86	2.28	2.79	3.40	5.03
22	1.92	2.37	2.92	3.60	5.44
23	1.97	2.46	3.07	3.82	5.87
24	2.03	2.56	3.22	4.05	6.34
25	2.09	2.66	3.39	4.29	6.85

Number of Years.	3 per Cent.	4	5	6	8
26	2.16	2.77	3.56	4.55	7.40
27	2.22	2.88	3.73	4.82	7.99
28	2.29	3.00	3.92	5.11	8.63
29	2.36	3.12	4.12	5.42	9.32
30	2.43	3.24	4.32	5.74	10.06
35	2,81	3.95	3.52	7.69	14.78
40	3.26	4.80	7.04	10.29	21.72
45	3.78	5.84	8.98	13.76	31.92
50	4.38	7.11	11.47	18.42	46.90
55	5.08	8.65	14.64	24.65	68.91
60	5.89	10.52	18.68	32.99	101.26
70	5.92	15.57	30.43	59.07	218.61
80	10.64	23.05	49.56	105.80	471.95
90	14.30	34.12	80.73	189.46	1018.91
100	19.22	50.50	131.50	339.30	2199.76

A Table

A Table shewing the Amount of an Annuity of 1 l. *a Year, in any Number of Years, not exceeding* 40, *at* 3, 4, 5, 6, 7, 8, per Cent.

Years.	3	4	5	6	7	8
1	1.00	1.00	1.00	1.00	1.00	1.00
2	2.03	2.04	2.05	2.06	2.07	2.08
3	3.09	3.12	3.15	3.18	3.21	3.25
4	4.18	4.25	4.31	4.37	4.44	4.51
5	5.31	5.42	5.53	5.64	5.75	5.87
6	6.47	6.63	6.80	6.97	7.15	7.33
7	7.66	7.90	8.14	8.39	8.65	8.92
8	8.89	9.21	9.55	9.90	10.26	10.64
9	10.16	10.58	11.03	11.49	11.98	12.49
10	11.46	12.01	12.58	13.18	13.82	14.49
11	12.81	13.49	14.21	14.97	15.78	16.65
12	14.19	15.03	15.92	16.87	17.89	18.98
13	15.62	16.63	17.71	18.88	20.14	21.50
14	17.09	18.29	19.60	21.02	22.95	24.21
15	18.60	20.02	21.58	25.28	25.13	27.15
16	20.16	21.82	23.66	25.67	27.89	30.32
17	21.76	23.70	25.84	28.21	30.84	33.75
18	23.41	25.65	28.13	30.90	34 00	37.45
19	25.12	27.67	30.54	33.76	37.38	41.45
20	26.87	29.78	33.07	36.78	41.00	45.76
21	28 68	31.99	35.72	39.99	44.87	50.42
22	30.54	34.25	38.51	43.39	49.01	54.46
23	32.46	36.62	41.43	46.99	53.43	60 89
24	34.43	39.08	44.50	50.81	58.18	66.76
25	36.46	41.65	47.73	54.86	63.25	73.11

Years.	3	4	5	6	7	8
26	38.55	44.31	51.11	59.15	68 67	79.95
27	40.74	47.08	54.67	63.70	74.48	83.35
28	42 93	49.96	58 40	68.53	80.70	95.33
29	45.21	52.97	62.32	73.63	87.34	103.97
30	47.57	56.08	66.44	79.06	94.46	113 28
31	50.00	59.33	70.76	84.80	102.07	123.35
32	52.50	62.70	75.30	90.89	110.22	134.21
33	55.07	66 20	80.06	97.34	118.93	145.95
34	57.73	69.86	85.07	104.18	128 25	158 62
35	60 46	73.65	90.32	111.43	138.24	172.32
36	63.27	77.59	95.83	119.12	148.91	187.10
37	66 17	81.70	101.62	127.27	160.34	203.07
38	69.15	85 97	107.71	135.90	172.56	220 31
39	72.23	90.41	114 09	145.06	185.64	238.94
40	75.40	95.03	120.80	15476	199.64	259.06

I beg

I beg Leave to close the whole with a few Observations on the Usefulness of Surveys, and correct Maps of Gentlemens Estates; and let it be observed, in the *first* place,

That, by such Survey, a Lord may, at any time as it were, look over his Demesnes, and not go out of his Mansion-house; he may acquaint himself with the Names, the Quantity, the Quality, and Situation of every particular Tenement, as the same is now, or was parcell'd out at the Time of making the Survey: The Houses, Courtlages, Gardens, Orchards, Parks, Warrens, Meadow-Grounds, Arable, Pasture, Groves, Coppices, Brakes, Moors, Commons, together with the exact Quantity of each, and Form in which they lay, are in the Map discovered at one View: As are also, the Timber Trees, Springs and Rills of Water, Mines, Quarries, Roads, Paths, Water-courses, Rocks, Caverns, Gates, Bars and Fences, and every other Thing that is worth remarking on the Estate; all which are laid down in just Proportion, and at their proper Bearings with respect to the cardinal Points, and also with regard to one another. In short, the Map is no other than the Lands in Miniature; and, if it be accurately done, the Scale and Compasses will tell the Length of any Hedge, or the Distance between any two Places on the Estate, by applying the same to the Map, as well as the Chain by an actual Mensuration from Place to Place in the Field.

Secondly,

Secondly, As to the Tenements leaſed out or granted for Terms of Years or Lives; beſides all the Advantage and Amuſement beforementioned ariſing, by having all theſe neatly laid down in a Map; the Survey-Book will, at one View, diſcover the Situation, the Tenure, the Term granted out, Date of the Grant, Tenant's Name, Fine on Renewal, Names and Age of the Lives, reſerved Rent, Herriots and Services, and other Payments, high and chief Rents iſſuing out of, or payable to the Lord, in reſpect of the Manors or Lands; the Rates, Taxes and Aſſeſſments, yearly Value of each Incloſure by the Acre, as well as that of the whole Tenement; the Quantity, Quality, Conveniency and Inconveniency of each Parcel or Incloſure, with ſuch other Remarks as a judicious Surveyor thinks proper to inſert.

Thirdly, As ſuch Maps and Surveys are thus uſeful to the Lords of Manors, in whoſe Time they are made, ſo are they more eſpecially to their Poſterity, the Generations to come; as they will aſſiſt them in detecting the Malepractices of their Tenants. It is always the Practice for Lords to reſerve Timber-trees, Mines and Quarries, to their own Uſe; and 'tis too common for Tenants to cut down or ſpoil the former; and, as much as in them lies, to deſtroy or diſcourage the working of the latter: But any Timber-trees that have been cut down, or ruined by topping or paring up; any Orchards or Hop-Grounds that have

been diſplanted, or ſuffered to go to Decay; any Coppices that have been deſtroyed by grubbing up, or neglecting to preſerve the young Bud; any Meadow-grounds converted to Arable; any Fences demoliſhed, or Out-boundaries removed; any Water-courſes diverted, or Houſes let down; in ſhort any Waſte or Deſtruction whatſoever, either in theſe or any other reſpects, will, at any time hereafter, by viewing the then State and Condition of the Premiſes, and comparing it with the Map and Survey, be amply diſcovered, and the Abuſe thereby eaſily detected.

But, *Fourthly*, Another, and indeed *the chief* Uſe, that may be made of thoſe Maps and Surveys, is that of fixing and determining the Boundaries of Pariſhes, Lordſhips, Manors, Lands and Tenements.

The numberleſs Diſputes that ariſe betwixt the Lords of Manors, and Owners of Lands, in relation to the Bounds and Fences betwixt them; the Right to Waſtes, Water-courſes, Timber-trees, Ways, Foot-paths, and many other Privileges and Cuſtoms, and the many tedious and expenſive Law-ſuits which are occaſioned thereby, plainly evince the Uſefulneſs of any Method that can be found out, for putting a Stop to ſuch Differences, and preſerving Peace and good Neighbourhood, which is very often interrupted by a too rigid Adherence to an imaginary Property in Things of a very trifling and inſignificant Value.

If

If any Perſon wants to be convinced of the Truth of this Obſervation, let him but attend our Courts of Juſtice, a good Part of whoſe Time is generally taken up with deciding Claims to Things of ſo ſmall Value, that they have been, perhaps on that Account, ſo long diſregarded by both Parties, until 'tis become very difficult to diſcover which of them is the true Proprietor.

It may ſeem ſtrange, that Claims ſo trifling in Value ſhould be ſo eagerly purſued, and not only divide the Affections, and diſjoint the Friendſhip, which hath long ſubſiſted between the Gentlemen themſelves, who have, or at leaſt think they have, ſome ſmall Intereſt at Stake; but the whole Neighbourhood are drawn in as Abettors, to one and the other Party: The Tenants of each Manor are immediately alrmed in behalf of their Lord, and too officiouſly join themſelves in his Intereſt; inform him of every thing they can ſqueeze out of the other Party, which they think will irritate him, tho' perhaps it do not in the leaſt tend towards a Diſcovery of his Right; and, if they can recollect a faint Remembrance of ſome former Paſſages, which, by Length of Time, are almoſt worn out of their Memory; their Zeal for the Cauſe prompts them to ſupply the Circumſtances that are wanting; and, by that means, too often make it ſpeak more to the Purpoſe than it really ſhould; and, what is ſtill worſe, as the Facts, which make out the Title to the Thing in queſtion, are

ſupported by Evidence of ancient Uſage; it is very common for thoſe over-buſy Meddlers, to call in their oldeſt Servants or Workmen, who have been long acquainted with the Place in Diſpute; and, after relating the Affair to them two or three times over, and diſcovering a warm Deſire that ſuch Facts as promote their Friend's Intereſt ſhould be made out; they leave them to lay their Heads together, and refreſh their Memories. This Management having ſuch a weak Subject to work upon, and the Diſtance of the Object, as well as the Dimneſs of the Underſtanding, joining in the Deception, too often, without any ill Intention, raiſes up an Evidence that hath not the leaſt Foundation in Truth and Juſtice.

How elſe ſhould it come to paſs, that in Cauſes of *this Nature* eſpecially, the Evidence on Behalf of the different Parties, ſhould ſo claſh with one another? 'Tis very unaccountable, as well as ſhocking, to hear ancient People, who have a juſt Abhorrence of the Crime, and would even ſtart at the Name of Perjury, give Evidence on Facts on their own Knowledge, directly contradictory to one another: A Jury, in ſuch Caſe, are oftentimes left to determine the Property in the Thing contended for, from dark and obſcure Circumſtances, which are almoſt as likely to produce a *wrong* as a *right* Deciſion of the Cauſe of Action.

But written Evidence is not liable to thoſe Inconveniencies, that will always ſpeak the ſame Thing; Time can never alter the *Words*, nor the

the Meaning of them; and ſo likewiſe, a Plan or Map of an Eſtate, if once correct, will always be ſo: If the Rights and Properties in the Boundaries, Walls, Hedges, Waters, Ways, Paths, Waſtes, Timber-trees and the like, be at firſt juſtly laid down in a Map; and eſpecially if in the ſame two or more fixed or immoveable Marks within View, ſuch as Pariſh-Churches, Caſtles, or the like, are inſerted; it will then be impoſſible, that any of thoſe Boundaries, *&c.* can be removed; but that the ſame may be eaſily diſcovered by the Map, at any Diſtance of Time, and reduced again to their former Place.

Nothing is more common, than where a River was anciently the Boundary betwixt two Pariſhes or Manors, the Stream, by waſhing away the Banks on one Side, and quitting as much Ground on the other, hath changed its Courſe; and by that means the Rights of one of the Pariſhes, or Manors, may be extended beyond the River; but where, or how far, may not in a long Tract of Time be ſo eaſily diſcovered. In ſuch Caſe, the Deſcription in the ancient Deeds or Surveys, how correctly ſoever they were made, will not decide the Matter in queſtion; for there ('tis very likely) the Eſtate is only ſaid to be bounded by the River; and, in this reſpect, the Map will likewiſe be an infallible Guide.

A great deal more might be ſaid to illuſtrate the great Uſe of ſuch Draughts or Plans, for preventing Differences betwixt Gentlemen, whoſe

whoſe Lands lie contiguous to each other; by fixing and eſtabliſhing ſuch laſting Bounds as will not be in the Power of a Knave to vary, nor of Time to obliterate.

But here it may be objected, that ſuppoſing this to be good Reaſoning, and admitting that the Bounds thus adjuſted will be ſatisfactory to the Gentleman himſelf, and perhaps to his Poſterity; yet, of what Uſe will it be? The Neighbour whoſe Lands border upon him, will not be concluded by it; neither can it be given as Evidence in any Court of Law; and, to what Purpoſe is it for a Perſon to put himſelf to the Expence of adjuſting his Bounds, to ſerve an End which can by no means be brought about thereby?

That Lines thus drawn by the Privity and Direction of one Party only, who is Owner of the Lands thereby divided, Reaſon, as well as Law, forbids ſhould be given in Evidence; but why may not both the Owners of the Lands, thus bordering on each other, join in making ſuch Map; and, for the better Satisfaction, ſend their Agents to attend the Artiſt, while he is taking the Field Copy thereof; who, at ſuch Places, where any Difficulty ariſes, may call in the beſt Evidence that they can, and from thence compromiſe the Matter, and put an End to all further Diſputes about it?

'Tis highly probable, if this were attempted betwixt ſuch Lords as do already differ about ſome particular Claims; and, if they did, in a friendly Way, call in a neighbouring Gentleman

man or two, that are common Friends to them both, as Mediators betwixt them; a great deal of Expence might be prevented; and, which is more valuable, Peace and Friendſhip might be preſerved betwixt *them*; and they might put it out of the Power of their *Poſterity* ever to differ on that Account in Time to come.

Neither are there any Boundaries whatſoever ſo plain and evident, as not to be eſteemed better fixed and eſtabliſhed, by being thus drawn out on Parchment. Rivers will alter their Courſe by Nature, as is before ſhewn; Fences of all Kinds may be vary'd by Art and Labour; the ſame Tenant may be in Poſſeſſion of the Tenements on both Sides the Boundaries, and may continue ſuch Poſſeſſion for many Years; during which, he may, for his Conveniency, throw down a decay'd Fence, and ſo obliterate it, as that the Place where it was may not be viſible. I have known ſeveral Inſtances of this Kind, and expenſive Law-ſuits occaſioned thereby, which might have been prevented by ſuch an eſtabliſhed Plan as I am recommending.

When a Map is thus made and agreed to by all the Parties, that are any way intereſted in the Affair, who, it is to be preſumed, will each of them have an original Draught thereof; what ſhould then hinder its being a concluſive Evidence for ever to the Owners of ſuch Lands? Surely, the Lawyers (if they do not diſcourage it on account of its Tendency to leſſening

their

their Practice) will eaſily find out a Method of its being admitted as ſuch.

Experience ſhews, that not only the Lords that are entitled to the Inheritance of Lands, differ about their diſtinct Rights, but a great many Controverſies ariſe betwixt one Tenant and another, in the ſame Manor, about their Rights and Privileges, in reſpect of their ſeveral Tenements; and Law-ſuits, likewiſe, often enſue on thoſe particular Claims.

A correct Map of thoſe Manors, particularly ſetting forth the Boundaries of each Tenement, and the peculiar Privilege thereto belonging, eſtabliſhed by a Jury of Tenants, in the Court of the Manor, by annexing it to the Court-Roll, or by ſuch other Method as might be concluſive to all the Tenants, and qualify it to be given in Evidence; would put a ſhort End to all Diſputes of this Kind, and prevent any from growing up in Time to come.

Fifthly, Another Uſe of Maps is this; namely that thereby a Lord may ſee how a Tenement, too large for one Tenant, may be conveniently divided; or how two ſmall Tenements may, with Advantage, be laid together: By this he will be enabled to guard againſt any ill Deſigns that a Tenant may have in View, when he applies to take ſome particular Parcels, by which perhaps he intends only to diſtreſs him, by rendering a Part of the Remainder unfit to be lett at all; and afterwards refuſing it at any, but a very undervalued Rate, and

at

at laſt, conſuming the Fruits by way of Treſpaſs.

Sixthly, The preſerving the Identity of Things is another good Uſe of this Way of deſcribing them. Tenements, as well as the ſeveral Parcels of the ſame Tenement, in ſome Places vary their Names, with every new Occupier; and this cauſes ſuch Confuſion in the Accounts of Stewards, that 'tis very difficult to compare any *former*, with the *preſent* Stewards Books. Ancient Title-Deeds, wherein divers Tenements are included, are by this means unintelligible; and when ſome Part of a Tenement appears in an old Settlement, under the Names of the ſeveral Parcels or Incloſures, it ſometimes happens, that before the Uſes in the Settlement are all ſpent, 'tis impoſſible to find out the Part intended to paſs thereby.

Thus again, a Survey of a Manor made two or three Generations ago, without any Map annexed thereto, can hardly at all, at leaſt not without a vaſt deal of Difficulty, be underſtood at this time; this occaſions a vaſt deal of Confuſion, and renders thoſe Surveys, which would otherwiſe be very valuable, of no Uſe at all.

Another Reaſon for preſerving the particular Parcels of each Tenement is this: A Tenant ſometimes holds two Tenements by different Leaſes, one of which determines before the other; perhaps there hath been an Unity of Poſſeſſion for 60 or 70 Years; and, as nobody is acquainted with the Affair but himſelf, it

may be in his Power, undiſcovered, to hold out ſome Parts of the Tenement that is fallen into Hand, (as the two lie contiguous to each other) until the Expiration of his other Leaſe. Many other Abuſes and Impoſitions of this kind may be ſucceſsfully practiſed by Tenants to the Prejudice of the Lord, (eſpecially where neither himſelf nor his Steward live on the Spot) unleſs he be furniſhed with a Map of the Manor, and of the ſeveral Tenements thereof.

The only Objection that can be made againſt ſurveying and mapping Eſtates, is that of the Expence that attends it; and this will, I believe, on mature Conſideration, be thought much over-balanced by the Benefit that will accrue thereby: But, if any Gentleman ſtill thinks otherwiſe, let him look back into the Accounts and Tranſactions of his Predeceſſors, and ſee whether he cannot diſcover in every 7 Years, ſome Fraud or Deſtruction committed by Tenants, *&c.* which might have been prevented by the Aſſiſtance of ſuch a Map, purchaſed at half the Expence; and let him alſo conſider, that once doing it, does it effectually for the Uſe of his lateſt Poſterity.

FINIS.

Lately Publiſhed,

(Printed for W. INNYS in St. *Paul's Church-Yard*, and may be had at the ſame Place with this Book)

The GENTLEMAN'S STEWARD and TENANTS of MANORS Inſtructed.

Containing rational, eaſy and familiar *Rules* and *Tables*, for finding the Value of Eſtates of Free-hold, Copy-hold, or Leaſe-hold, as well on Lives as for Years abſolute, *&c.*

With an Enquiry into the Nature of the annual Diſburſements, Precarioufneſs of the Tenure, and Caſualties, that Eſtates in Fields or Houſes, or both, are charged with, or liable to; and how they are to be accounted for in the Valuation. Wherein the ERRORS and ABSURDITIES of all the common Methods of Valuation, and the Diſadvantages thence accruing, ſometimes to the Landlord, and ſometimes to the Tenant, are juſtly expoſed. The Tables for valuing Eſtates on Lives being founded on Dr. *Halley's* Hypotheſis, and calculated by the Method laid down by Mr. *Abraham de Moivre*, to 4, 5, 6, 7, and 8 *per Cent.*

To which is added, An

APPENDIX:

Containing the Deſcription and Uſe of an Inſtrument for diſcovering the Number of Feet contained in any Timber-Trees before they are cut down, by Inſpection only.

By JOHN RICHARDS, *of* EXON.

Lately Published,

for V. Inkyns in St. Paul's Church-
and may be had at the same Place with
Book)

GENTLEMAN'S STEWARD and TENANT'S
of MANORS Enlarged.

containing rational, easy and familiar Rules and
for finding the Value of Leases of Free-
Copy-hold, or Lease-hold; as well on
as for Term absolute, &c.

Directory into the Nature of the annual Distinctions,
Numbers of the Terms, and Quotients, that Estates in
or Houses, or both, are charged with, or liable to;
they are to be accounted for in the Valuation.
Fines and Recoveries of all the common
Value, and the Deliverance thence accru-
to the Lord, and from them to the Tenant,
Tables for young Fathers on Lives
on Purchases, Improvements and Calculated by
down by the Author, to 4 per
and 6 per Cent.

To which is added, A

APPENDIX:

Rules and Use of an Instrument for
the Measure of Time contained in any Theore-
easily cut down, by Logarithms only.